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2020 AAD ABSTRACTS

Late-Breaking Research

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LATE BREAKING RESEARCH

New systematic therapies and trends in cutaneous melanoma deaths among US Caucasians, 1986 – 2016

Until recently, metastatic cutaneous melanoma was a nearly incurable cancer. However, the development of new, highly effective therapies and trends toward the diagnoses of earlier stage tumors described in recent publications suggest that population-level improvements in mortality have occurred. We reviewed melanoma incidence and mortality among Caucasians (the group most affected by melanoma) using the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) dataset. From 1986 to 2016, incidence rates increased by 108% with an (Annual Percent Change (APC) = 2.7% (95% CI: 2.5 – 2.9). Between 1986 and 2013, overall mortality rates increased by 7.5%. Beginning in 2011, ten new treatments for metastatic melanoma were approved by the FDA. From 2013 to 2016, overall mortality for the general population decreased by 17.9% with an APC = -6.24% (95% CI: -8.7 – -3.7). The sharpest declines were among men ≥50 (APC -8.25%; 95% CI: -12.2 – -4.1) starting in 2014, and women ≥50 (APC -5.8%; 95% CI: -8.9 – -2.5) starting in 2013. This recent, multi-year decline is the largest and most sustained improvement in melanoma mortality ever observed, and is unprecedented in cancer medicine. We conclude that the introduction of new therapies for metastatic melanoma is associated with a significant reduction in population-level mortality.

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High neoantigen burden in mycosis fungoides revealed by whole exome sequencing

Background Mycosis fungoides (MF), the most common cutaneous T-cell lymphoma, has a dismal prognosis in advanced stages[1]. The success of immune checkpoint inhibitors (ICI) in treating advanced malignancies has not extended to MF[2]. The key to understanding the observed response is neoantigens - 'new' peptides generated by somatic mutations in tumour cells. As tumour-specific markers, neoantigens are an attractive immunotherapeutic target[3]. A high neoantigen burden across multiple cancers has been associated with higher survival after ICI treatment[4,5]. Neoantigens have never been studied in MF, and our objective was to characterize their identity and number in MF.

Methods: MF biopsies were subject to whole exome sequencing (WES) at 200X depth. RNA-seq was used to validate expression of predicted peptides. Bioinformatics pipelines utilized included Mutect2[6] for mutation calling, OptiType[7] for HLA typing and MuPeXi[8] to predict peptides (8-11 amino acids long) and binding affinities to HLA types.

Results: A high number of non-synonymous mutations and putative neoantigens were identified. Neoantigens were stratified into strong binders (<0.05%rank), intermediate binders (<0.15%rank) and weak binders (<0.5%rank). A significant proportion of predicted peptides were expressed according to RNA-seq.

Conclusion: MF has a high tumour mutation burden, resulting in a large number of putative neoantigens. The paradoxically poor ICI response may be attributed to challenges in using T-cell based therapies to target T-cell malignancies, and intratumour genetic heterogeneity producing subclonal neoantigens. This suggests a role for the development of immunotherapies targeting specific neoantigens.

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Oral JAK 1/JAK 2 Inhibitor CTP-543 Achieves Primary Endpoint in Patients with Alopecia Areata

Introduction: CTP-543 is an oral JAK1 / JAK2 inhibitor, an important mechanism in alopecia areata (AA). A Phase 2 double-blind, randomized, placebo-controlled trial was conducted to evaluate safety and efficacy of CTP-543 in adults with moderate-to-severe AA.

Methods: 149 adult (18-65 yo) AA patients having ≥50% hair loss were sequentially randomized to receive 4, 8 or 12 mg BID of CTP-543 or placebo for 24 weeks. The primary endpoint was the proportion of patients achieving ≥50% relative reduction in SALT at Week 24 from baseline.

Results: In the 8 and 12 mg BID cohorts, 47% ($p < 0.001$) and 58% ($p < 0.001$), respectively, of patients achieved the primary endpoint compared to 9% for placebo. The 8 and 12 mg BID cohorts were significantly different from placebo ($p < 0.001$) on both the Clinician and Patient Global Impression of Improvement Scales. At Week 24, 26% and 42% of patients in the 8 and 12 mg BID cohorts, respectively, achieved SALT 20 ($p < 0.05$ vs. placebo) and 36% of patients in the 12 mg BID cohort achieved SALT 10 ($p < 0.05$ vs placebo). The most commonly reported adverse events (≥10%) for the 12 mg BID cohort were headache, nasopharyngitis, upper respiratory tract infection, and acne. There was one serious adverse event reported (cellulitis); however, the patient completed the study.

Conclusions: Treatment with 8 and 12 mg BID of CTP-543 for 24 weeks was generally well tolerated and resulted in significant hair regrowth and patient- and clinician-reported ratings of improvement in adults with AA.

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The Impact of Synchronous Skin Cancer Identification on Mohs Micrographic Surgery and Reconstruction Plans

Background: Patients referred for Mohs micrographic surgery (MMS) are at risk for synchronous skin cancers adjacent to their index tumor. The frequency of adjacent synchronous skin cancers and their impact on MMS planning have not been characterized.

Type of Study: This is a prospective case series of patients with malignant cutaneous tumors who were referred to an urban academic center for MMS.

Methods: This study enrolled 182 patients with biopsy-proven skin cancers treated with MMS at the University of Pennsylvania. After outlining the margins of the index skin cancer, the Mohs surgeon performed frozen section biopsies for immediate diagnosis of any clinically suspicious lesions within a 5-cm radius of the index tumor. The primary outcome was the frequency of neighboring synchronous skin cancers. The secondary outcome was the frequency that synchronous skin cancers altered the surgical plan.

Results: Half of patients (90/182, 49.5%) had at least one neighboring skin cancer diagnosed on the day of MMS. The number of synchronous malignant lesions ranged from 1-5 (mean 1.73) and the average closest distance to the index cancer was 2.11 cm. Significant risk factors for synchronous skin cancers were age over 65 (OR 3.19), history of prior skin cancer (OR 4.73) and an index skin cancer diagnosis of SCC (OR 2.46). 111/182 cases (61.0%) required alteration in the original Mohs plan and 18/182 cases (9.9%) required alteration in the original reconstruction plan.

Conclusion: Patients presenting for MMS are at high risk to have undiagnosed skin cancers adjacent to the index tumor that can alter surgical plans.

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The effect of adding combined oral contraceptives or metformin to laser hair removal treatment on the quality of life of polycystic ovarian syndrome patients with hirsutism; a randomized control trial

Hirsutism affects 10 to 20% of females. Polycystic ovary syndrome (PCO) is a major cause of hirsutism.

Aim of the work: To assess the effect of adding combined oral contraceptives (COCP) or metformin to laser hair removal on the quality of life of (PCO) patients with hirsutism.
(150) PCO hirsute patients were randomized into 3 groups: Group I: received laser hair removal alone, Group II received metformin and laser hair removal, Group III received COCP and laser hair removal. Diode laser 810 nm was performed in the form of initial 6 monthly sessions, followed by another 2 sessions after 3 and 6 months. Assessment before treatment, following the initial 6 sessions, and at the (3m), and (6m) sessions, using Visual Analogue Score, Dermatology Life Quality Index and a questionnaire specially designed to assess common symptoms associated with hirsutism.
All patients showed a significant improvement in both quality indices after treatment at 0m, 3m and 6m compared to baselines ($P<0.001$). Group III showed significant better improvement at 0m, 3m, and 6m compared to group II & group I ($p=0.001$, $p=0.001$, $p=0.001$ respectively). Group II showed significant worsening of both DLQI and HLQI at 3m (p value=0.001), which improved again at 6m showing no significant difference to 0m. Finally, group I showed significant worsening at 6m (p value=0.001).

Conclusion: Using hormonal treatment with laser hair removal can achieve better results, maintenance and improvement in QOL compared to combining metformin with laser hair removal or laser hair removal alone.

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Intravenous Gentamicin Therapy for Epidermolysis Bullosa

Background: Recessive dystrophic epidermolysis bullosa (RDEB) and junctional EB (JEB) are incurable and fatal inherited blistering skin diseases due to mutations in the genes encoding type VII collagen (C7) and laminin-332. 30% of RDEB patients and 32-70% of JEB patients harbor nonsense mutations in COL7A1 or in LAMA3, LAMB3, and LAMC2, respectively. Previously, we showed that topical gentamicin induced new, functional C7 and laminin-332 in RDEB and JEB patients and improved wound closure. In this study, we administered intravenous (IV) gentamicin to four RDEB and three JEB patients with nonsense mutations.

Type of Study: Clinical trial

Methods: An open-label clinical trial was conducted with four RDEB patients and three JEB patients. All patients received daily infusions of 7.5 mg/kg gentamicin for 14 days. Also, two RDEB patients further received twice-weekly gentamicin infusions for three months. Patients were assessed at baseline and at one and three months after infusions for the expression of C7 or laminin 332, wound healing, clinical improvement, and potential side effects.

Results: All RDEB patients demonstrated new and increased C7 expression by either infusion regimen. All three JEB patients exhibited increased laminin-332 after IV gentamicin. In addition, IV gentamicin promoted wound closure and improved patient clinical phenotypes. Most interestingly, we also observed the improvement of airway symptoms in JEB patients. No adverse effects and no auto-antibodies against new laminin-332 or C7 were observed.

Conclusion: IV gentamicin may offer JEB and RDEB patients a readily available, safe and effective treatment which improves wound healing and quality of life.

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A cost-analysis of dermatology rapid access clinics within an urban academic medical center

Skin conditions encompass a significant percentage of emergency department (ED) visits.[1] However, there are virtually no dermatology specific rapid access clinics (RAC) for expedited evaluation of cutaneous disease. Previous RAC studies showed high referring provider satisfaction,[2] increasing utilization,[3] and lower patient costs,[4] but none quantified RAC's financial impact. We performed a health-system perspective cost-analysis of a dermatologic RAC at an urban academic

medical center.

We reviewed University of Pennsylvania Healthcare System records for the number of RAC referrals, completed RAC visits, and ED visits for cutaneous disease within thirty days of referral from 03/01/2013-03/01/2019. Referring providers indicated if the patient would have been sent to the ED in the RAC's absence. Status quo costs (RAC administrative, RAC visit, and qualifying ED visits costs) were compared to ED costs for patients who would have been sent to the ED. RAC and ED cost ranges used were as previously reported.[5]

Of 78,194 patients referred to the RAC, 10,215 completed RAC visits, 639 visited the ED for a skin condition within 30 days of referral, and 8.7% would have otherwise been sent to the ED. Costs were $103.70-$283.00 per RAC visit and $763-$1297 per ED visit.[5] Annual RAC administrative costs were conservatively estimated at $100,000. Average per referred patient cost savings were $38.62-$57.08 for the current RAC system, representing potential total savings of $4,462,224.

Our study demonstrates dermatologic RACs provide cost-savings, suggesting health systems could benefit from offering RAC services staffed by dermatologists

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ARQ-151, Roflumilast Cream, Significantly Improves Chronic Plaque Psoriasis in Phase 2b Study

Background: ARQ-151 (roflumilast cream) is a highly potent, selective phosphodiesterase-4 (PDE-4) inhibitor being developed for chronic plaque psoriasis.

Type of Study: Phase 2b

Methods: In this parallel group, double-blinded study, 331 psoriasis subjects (2-20% BSA) were randomized 1:1:1 to ARQ-151 cream 0.3%, 0.15%, or vehicle applied once-daily for 12 weeks. Efficacy measures included IGA, intertriginous IGA, PASI, worst itch NRS (WI-NRS), and Psoriasis Symptom Diary (PSD). Safety assessments included adverse events (AEs), clinical laboratories, electrocardiograms, and local tolerability.

Results: Both ARQ-151 doses achieved the primary efficacy endpoint – IGA 'clear'/'almost clear' at Week 6 (p</=0.004 vs. vehicle). At Week 8, IGA success ('clear'/'almost clear' plus 2-grade improvement) was observed for ARQ-151 0.3% and 0.15% in 32.2% and 24.5% of subjects, respectively (p</=0.005 vs. 9.8% vehicle rate). Among subjects with intertriginous involvement, intertriginous IGA success ('clear'/'almost clear' plus 2-grade improvement) was 87.1% in ARQ-151 0.3% subjects at Week 8 (p=0.007 vs. 36.1% vehicle rate). By Week 2, ARQ-151 0.3% had statistically greater improvements vs. vehicle on PASI, WI-NRS and multiple PSD items. Week 8 PASI-75 and PASI-90 rates for ARQ-151 0.3% were 31.2% and 16.5%, respectively (p</=0.015 vs. vehicle rates of 12.8% and 5.5%). Treatment-emergent AEs (TEAEs) were mostly mild or moderate with no clinically significant differences across groups. Application site, gastrointestinal, and psychiatric

TEAEs were uncommon. One of 219 subjects on ARQ-151 discontinued due to an AE.

Conclusion: ARQ-151, investigational once-daily roflumilast cream, was well-tolerated and achieved early and significant improvements in psoriasis signs and symptoms, including in intertriginous areas.

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Creation and Validation of Classification Criteria for Discoid Lupus Erythematosus (DLE)

Background: No classification criteria currently exist for DLE, which has led to problematic heterogeneity in research efforts. We have previously generated an item list of 12 potential classification criteria using an international Delphi consensus process. Herein we present the first validated classification criteria for DLE.

Type of study: Prospective cohort study

Methods: Patients were identified at clinical visits as having either DLE or a 'DLE mimicker'. After each visit, dermatologists determined if morphologic features were present. One dermatopathologist at each site reviewed pathology if available to see if the histopathologic features were present. Diagnosis by clinical features and dermatopathology were tabulated and presented as counts and percentages. Clinical features among those with and without DLE were calculated and compared with chi-square or Fisher's exact tests. Candidate models were identified using best subsets logistic regression analysis. Improvement tests, fit statistics, and discrimination were considered to choose a final model. Analyses were performed using SAS 9.4 (SAS Institute, Cary, NC).

Results: The final model for DLE classification criteria includes only clinical variables and includes atrophic scarring (3 points), location in the conchal bowl (2 points), preference for the head and neck (2 points), dyspigmentation (1 point), follicular hyperkeratosis and/or plugging (1 point), and erythematous to violaceous in color (1 point). This model has an AUC of 0.91 (95% CI 0.87-0.95). A score of 5 points yields a sensitivity of 84.1% and a specificity of 75.9% in the classification of DLE.

Conclusion: We present the first ever validated classification criteria for DLE.

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BELIEVE-PV Phase II Part B Study: Extended Treatment With PRN1008 Improves Outcomes For Patients With Pemphigus

Background: PRN1008 is an oral, first-in-class, reversible Bruton tyrosine kinase inhibitor optimized for immune-mediated diseases. BELIEVE-PV part A study previously reported encouraging CR data and safety in pemphigus[1].

Methods: BELIEVE-PV part B phase II, open-label study (NCT02704429) included 15 patients (18-80 years) with newly diagnosed/relapsing, mild-to-severe pemphigus who received oral PRN1008 monotherapy or with low-dose CS of ≤0.5 mg/kg/day for 24 weeks with a 4-week off-therapy follow-up period. PRN1008 was initiated at 400 mg qd with intra-patient dose-escalation per investigator discretion allowed after week 2 to 400 mg bid, then 600 mg bid. Primary endpoint was control of disease activity (CDA) at 4 weeks on low-dose CS.

Results: As of October 2019, 8 patients completed treatment, 1 patient discontinued treatment because of worsening disease, and 6 patients remained on-study. The minimally effective dose was determined to be 400 mg bid PRN1008 based on optimal response and CR rate. The overall CDA rates at 4 and 12 weeks were 53% (8/15) and 80% (12/15), respectively. Thus far, 40% of patients (6/15) have achieved CR. The mean baseline PDAI score of 16 improved to 4 at 12 weeks. Nine of 15 patients (60%) achieved a PDAI of 0-1. The treatment-related AEs (>10%) were nausea, abdominal distension, infection (nasopharyngitis, tracheitis), and oropharyngeal pain that were transient and mild-to-moderate. No deaths occurred.

Conclusions: PRN1008 with longer treatment showed improved clinical activity, while maintaining a favorable safety profile consistent with part A[1]. These data are supportive of the ongoing phase 3 study dose.

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Apremilast In Recalcitrant Dermatomyositis: Results Of A Phase 2a Investigator Initiated Clinical Trial With Correlative Analysis.

Background: Treatment of recalcitrant dermatomyositis is challenging. Apremilast is a phosphodiesterase-4 (PDE-4) inhibitor commonly used in psoriasis. We conducted a phase 2a clinical trial studying the efficacy and safety of apremilast as an add-on therapy in patients with recalcitrant cutaneous dermatomyositis.

Type of study: Investigator initiated phase 2a clinical trial (Clinicaltrials.gov#NCT03529955)

Methods: We enrolled 8 patients with recalcitrant dermatomyositis, defined by a cutaneous disease activity severity index (CDASI>5), despite being on steroids and/or steroids sparing agents. Apremilast 30 mg orally twice daily was added to current treatment regimens and stopped after 6 months. CDASI, muscle evaluation, depression assessment and dermatology life quality index (DLQI) were performed at baseline and regularly till month 7.
Skin biopsies were performed at baseline and 3 months post-apremilast initiation to study changes in gene expression.

Results: At 3 months post-apremilast initiation, the overall response rate was 87.5%. Response was maintained at 6 months on therapy, with continued decrease in CDASI and improvement in DLQI. The mean decrease in CDASI was 10 points ($p<0.05$). Apremilast was well-tolerated and without any severe adverse events. Genetic analysis was performed on 7 patients before and 3 months after apremilast. Using GSEA analysis, we identified 13 pathways significantly downregulated by apremilast including: Ultraviolet response, reactive oxygen species, IL-2, INFα and γ, TNFα, and IL-6.

Conclusion: Apremilast is a safe and effective adjunctive therapy for patients with recalcitrant dermatomyositis with an overall response rate of 87.5%. Apremilast functions through downregulation of key signaling inflammatory pathways.

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Pityriasis rubra pilaris treated with ixekizumab; an open-label pilot trial

Background: Pityriasis rubra pilaris (PRP) is a rare/orphan disabling cutaneous disease that is characterized by widespread red scaly plaques and palmoplantar keratoderma. Overexpression of Th17 cytokines has been reported, suggesting an inflammatory pathogenesis that may have similarities to psoriasis[1]. We report results from a 24-week trial investigating ixekizumab, an IL-17A inhibitor, for the treatment of PRP.

Type of study: Single center, open-label, investigator-initiated trial (clinicaltrials.gov NCT03485976)

Methods: Eleven adult patients with moderate-to-severe PRP (as defined by Psoriasis Area and Severity Index [PASI] score of ≥ 10) received ixekizumab for 24 weeks at the FDA-approved dosing for psoriasis. Disease activity and severity was assessed by multiple investigator and patient-reported outcomes including PASI, Dermatology Life Quality Index (DLQI), and 10-point itch and pain numeric rating scales. Statistics were performed using paired t-tests.

Results: Mean age at enrollment was 47.3 ± 14.4 years; 8/11 participants were male. Mean improvement in PASI from baseline to the 24-week endpoint was 15.2 ± 2.11 ($p<0.001$), with 7/11 (63.6%), 5/11 (45.5%), and 2/11 (18.2%) achieving a PASI50, PASI75, and PASI90 at week-24, respectively. Mean improvement in DLQI following 24 weeks of treatment was 9.45 ± 2.52 points ($p=0.004$). Mean improvement in reported itch and pain at week 24 were 3.55 ± 0.813 ($p=0.001$), and 3.64 ± 0.730 ($p<0.001$). No serious adverse events or unanticipated problems occurred in the study cohort.

Conclusion: Ixekizumab is an effective and safe treatment option for some patients with PRP. Further biomarker research is warranted in order to predict clinical response.

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Risankizumab Versus Secukinumab in Patients with Moderate-to-Severe Plaque Psoriasis: A Phase 3 Trial

Background: We evaluated the efficacy and safety of risankizumab versus secukinumab in patients with moderate to severe plaque psoriasis.

Type of Study: Phase 3, global, multicenter, open-label, efficacy assessor-blinded study

Methods: Patients were randomized to receive risankizumab (150 mg) at Weeks 0, 4, and every 12 weeks thereafter or secukinumab (300 mg) weekly at Weeks 0-4, and every 4 weeks thereafter. Prespecified primary efficacy endpoints were proportion of patients achieving PASI 90 response at Week 16 (noninferiority margin of 12%) and at Week 52

(risankizumab superiority versus secukinumab). Missing data were imputed using nonresponder imputation.

Results: A total of 327 (risankizumab, 164; secukinumab, 163) patients were randomized. At Week 16, 74% of risankizumab patients achieved PASI 90 compared with 66% of secukinumab patients; adjusted difference (96.25% CI) was 8.2% (2.2, 18.6); thus, noninferiority was met. At Week 52, superiority of risankizumab (87%) versus secukinumab (57%) was achieved with respect to PASI 90 ($p<0.001$). All ranked secondary endpoints (PASI 100, sPGA 0/1, PASI 75) supported the superiority of risankizumab ($p<0.001$). Adverse events (AEs) were reported for 71% of risankizumab patients and 71% of secukinumab patients; 2 risankizumab patients and 8 secukinumab patients discontinued study drug because of an AE. Serious AEs were reported by 9 risankizumab patients and 6 secukinumab patients. The safety follow-up period is ongoing.

Conclusions: By meeting all primary and ranked secondary endpoints, risankizumab demonstrated superiority to secukinumab at Week 52 and noninferiority at Week 16. No new safety risks were identified.

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A Phase 2a, Multicenter, Open-Label, Dose-Escalation Study to Evaluate the Efficacy and Safety of DaxibotulinumtoxinA for Injection (DAXI) for the Treatment of Dynamic Forehead Lines (FHL) Following Glabellar Line (GL) Injections

Background: DAXI is a novel formulation of botulinum toxin type A that has shown an extended duration of efficacy in GL. This study was designed to evaluate the efficacy and safety of escalating doses of DAXI in the treatment of FHL after GL treatment.

Methods: A multi-center, open-label, dose-escalation study (NCT03786770) evaluated 12U, 18U, 24U, or 30U DAXI for the treatment of dynamic forehead lines 2 weeks following GL treatment (40U). Subjects were followed for a maximum of 38 weeks following GL treatment. Primary outcome measure was the Investigator Global Assessment Forehead Wrinkle Severity (IGA-FHWS) scale at maximum brow elevation 4 weeks after FHL treatment. GL and FHL severity were evaluated at 4-week intervals by both subject and investigator.

Results: 61 subjects were enrolled: the demographics were broadly similar between dose cohorts. At baseline 34% subjects had moderate and 66% severe FHL. The proportion of subjects achieving none or mild FHL 4 weeks after FHL treatment was 85.7% (12U, N=14), 86.7% (18U, N=15), 93.3% (24U, N=15), 100% (30U, N=14). The proportion of subjects “satisfied” or “very satisfied” with their results at week 4 following FHL treatment was 57.2%, 73.3%, 100% and 93.4% in the 12U, 18U, 24U and 30U cohorts respectively. No SAEs were reported, and there was no dose-response relationship in any AE.

Conclusions: DAXI substantially improved the appearance of FHL, resulting in high patient satisfaction. DAXI was well tolerated at all doses. Results out to 24 weeks will be available for presentation.

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Efficacy and Safety Of High Concentration Trichloro-Acetic Acid (TCA) Chemical Peels In Skin Phototype IV-VI, A South African Melasma Experience.

Background: Treatment for melasma has been extremely frustrating because no single therapy has proven to be beneficial for all patients[1]. Higher concentrations (>30%) of TCA peels have not been examined in darker skin types owing to potential complications[1,2,3]. We evaluated the safety and efficacy of sequential chemical peeling in a South African based

dark-skinned individuals.

Study Type: Quasi-experimental case studies.

Methods: A total of 15 participants of skin photo-type IV-VI with recalcitrant melasma were included to apply modified-kligmans' cream twice daily for 3 weeks and thereafter had sequential treatments administered as follows: 3 sessions of glycolic acid 20-70% (4-6 weeks apart) , then TCA 15-20% (1-2 sessions 4-6 weeks apart). Finally, all participants were subjected to 1-2 sessions of 30-40% TCA 6 weeks apart. A numbing ointment (15% prilocaine/23%Tetracaine) for pain relief was applied 45 minutes prior to treatment with 30-40% TCA. Photographs were used to evaluate efficacy and safety.

Results: Photographs of all participants showed melasma improvement from baseline. 26% participants experienced recurrences. All participants reported adverse effects of irritation, burning, and mild pain during the procedure with 30-40% TCA. Neither scarring nor hyperpigmentation was reported. The average down time was 14 days.

Conclusion: A high concentration of TCA was safe and tolerable in skin photo type IV-VI. A sequential chemical peel protocol may be beneficial approach to skin photo-type IV-VI. Further randomized controlled trial is underway.

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Efficacy and Safety of Abrocitinib in Patients With Moderate-to-Severe Atopic Dermatitis (AD): Results From the Phase 3 JADE MONO-2 Study

Introduction: Abrocitinib is an oral, once-daily Janus kinase 1 selective inhibitor under investigation for the treatment of AD.

Type of study: Randomized, placebo-controlled, double-blind phase 3 trial (NCT03575871; JADE MONO-2)

Methods: Patients aged ≥12 years with moderate-to-severe AD were randomly assigned (2:2:1) to receive monotherapy with once-daily abrocitinib 200 mg, abrocitinib 100 mg, or placebo for 12 weeks. Coprimary endpoints were Investigator's Global Assessment (IGA) response (clear/almost clear [0/1] with ≥2-grade improvement) and Eczema Area and Severity Index ≥75% improvement (EASI-75) at week 12. Multiplicity-controlled secondary endpoints included Peak Pruritus Numerical Rating Scale (PP-NRS) ≥4-point improvement at week 12. Other secondary endpoints included EASI ≥90% improvement (EASI-90). Safety was assessed via adverse event (AE) and laboratory monitoring.

Results: 155, 158, and 78 patients were treated in the 200-mg, 100-mg, and placebo groups. At week 12, greater proportions of abrocitinib-treated (200 mg or 100 mg) versus placebo-treated patients achieved IGA (38.1%, 28.4% vs 9.1%; P<0.001), EASI-75 (61.0%, 44.5% vs 10.4%; P<0.0001), PP-NRS (55.3%, 45.2% vs 11.5%; P<0.0001), and EASI-90 (37.7%, 23.9% vs 3.9%) responses. Least-squares mean percentage changes from baseline in EASI score were −73.3%, −60.0%, and −28.6%. AEs resulted in discontinuation for 3.2%, 3.8%, and 12.8% of patients in the 200-mg, 100-mg, and placebo groups. Serious infections were infrequent (<2%) in all groups.

Conclusion: Both abrocitinib doses were well tolerated and significantly improved AD signs and symptoms compared with placebo in patients with moderate-to-severe disease.

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Omalizumab for treatment of anticancer therapy associated dermatologic adverse events

Background: Dermatologic adverse events (dAEs) of anticancer therapies may not respond to symptom-directed treatments, thereby impacting therapy dosing and quality of life. We evaluated the safety and efficacy of omalizumab as a novel treatment strategy for cancer patients with dAEs from targeted and immunotherapy.

Type of Study: A single center retrospective analysis.

Methods: Relevant data were abstracted via review of electronic medical records. Response to omalizumab was assessed using the Common Terminology Criteria for Adverse Events v5.0, a standardized toxicity severity grading scale.

Results: A total of 48 patients with either moderate (36, 75%) or severe (12, 25%) topical corticosteroid-resistant urticarial (30, 63%), bullous pemphigoid (8, 17%), eczematous (6, 13%), and other (4, 8%) dAEs most frequently attributed to anti PD-1 immune checkpoint inhibitors (26, 54%) were included. Forty-five (94%) patients demonstrated a positive response to omalizumab, most (34, 76%) of which required only one dose to achieve maximum clinical benefit. Significant improvement, defined as full resolution or change in severity of dAEs by two or more grades, was observed in 23 (52%) of 44 patients with documented degrees of response. Fourteen of 18 (78%) patients with temporary interruption to anticancer therapy due to dAEs were successfully re-treated; only three required either dose reduction[1] or permanent interruption[2]. There were no reported cases of anaphylaxis or other life-threatening conditions due to omalizumab.

Conclusion: Anti-IgE treatment with omalizumab was safe and clinically beneficial in an uncontrolled cohort of cancer patients with dAEs from targeted and immunotherapy.

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A Randomized, Double-blinded Study Evaluating the Safety and Efficacy of AbobotulinumtoxinA Injections for Oily Skin of the Forehead: A Dose Response Analysis

Background: AbobotulinumtoxinA has been investigated for applications beyond facial rhytides including the treatment of oily skin.

Objective: We sought to investigate the optimal number of units and the duration of abobotulinumtoxinA for the treatment of oily skin.

Materials and Methods: This randomized, double-blinded, placebo-controlled study included 50 male and female subjects that got either 0, 15, 30, or 45 units of abobotulinumtoxinA injected into their forehead. For the 6 months after treatment

subjects were evaluated for the effectiveness of the treatment in decreasing the oiliness of their skin and the duration of this effect.

Results: Subjects in the treatment groups that received either 30 or 45 units of neurotoxin experienced a significant reduction in oily skin. This effect was present for the 6 month duration of the study. No treatment-related adverse events were reported during this study and both subjects and investigators reported a high level of satisfaction with the treatment.

Conclusion: 30 or 45 units of abobotulinumtoxinA are safe and effective doses in treating oily skin for improved cosmetic appearance.

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Tape stripping provides a non-invasive approach to differentiate between psoriasis and atopic dermatitis

Background: Skin biopsies are the gold standard for evaluating skin disease activity. However, biopsies involve scarring, and are problematic in children. We aimed to develop a sensitive, non-invasive and painless skin biomarker approach in atopic dermatitis/AD and psoriasis vulgaris/PV, using tape-stripping to study the cutaneous genomic profile.

Methods: 20 healthy volunteers, 20 psoriasis vulgaris (PV), and 20 Atopic Dermatitis (AD) patients had tape- strips collected. RNA was extracted and a large panel of immune and barrier genes were studied using qRT-PCR.

Results: Tape-stripping was well tolerated. Sample detection rate was 100% and 99 of 100 evaluated markers were detected. AD and PV lesions showed strikingly different expression profiles: with higher levels of Th2 products in AD including IL13 (fold-change/FC=169.0), IL4 (FC=7.7), IL31 (FC=4.3) CCL17 (FC=4.3), and Th2 activation markers such as ICOS (FC=16.9) and CCR4 (FC=5.5; $P<0.05$). PV lesions expressed higher levels of Th1 products, including IFNG (FC=51.1), and Th17 products, such as IL17A (FC=175.0) and NOS2 (FC=10 200; $p<0.001$). NOS2 expression differentiated between PV and AD lesions with 100% accuracy, serving as a potential disease classifier.

Conclusion: We developed a tape-stripping profiling approach with detection rates of 100% and high sensitivity allowing clear differentiation between AD and PV without a skin biopsy, and capturing key differences between their molecular profiles, showing a robust Th2 signature for AD and a Th1/Th17 skewing for psoriasis. Future studies are warranted to assess the potential application of this non-invasive technique for serially tracking changes in skin biomarkers and predicting response in clinical trials.

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A Phase 3, Randomized, Double-Blinded, Vehicle-Controlled Study to Evaluate the Safety and Efficacy of Topically Applied Sofpironium Bromide Gel, 5% in Japanese Patients with Primary Axillary Hyperhidrosis

Background: The prevalence of primary hyperhidrosis is reported to be 4.8% and 12.76% of the population in US and Japan, respectively. Sofpironium bromide is an investigational agent, a retro-metabolically designed anticholinergic in development for the topical treatment of axillary hyperhidrosis. Retro-metabolically designed drugs are rapidly metabolized in the bloodstream, potentially allowing for optimal local therapeutic effect with minimal systemic side effects.

Methods: A total of 270 subjects at 22 sites, age >12 years were randomized 1:1 to apply sofpironium bromide gel, 5% or vehicle once daily to the axillae for 42 days. All subjects had Hyperhidrosis Disease Severity Scale (HDSS) scores > 3, Hyperhidrosis Disease Severity Measure-Axillary (HDSM-Ax) scores > 2 and ≥ 50mg/5min gravimetric sweat production (GSP) in each axilla.

Results: The proportion of subjects achieving HDSS scores of 1 or 2 and > 50% reduction in GSP at end of treatment (EOT) [primary endpoint] was 53.9% in the treatment group ($p<0.003$) versus 36.4% with vehicle. GSP change from baseline to EOT was -157.6mg in the treatment group ($p<0.015$) versus -127.6mg with vehicle. HDSM-Ax change from baseline to EOT was -1.41 in the treatment group ($p<0.001$) versus -0.93 with vehicle. Sofpironium bromide gel, 5% was observed to be safe and well-tolerated. Only three patients reported anticholinergic adverse events (AEs) in the treatment group. These AEs were mild in severity and resolved spontaneously.

Conclusion: Topical sofpironium bromide has the potential to provide a noninvasive, topical axillary hyperhidrosis treatment that is effective, and an acceptable safety and tolerability profile.

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Assessment of efficacy and safety of topical administration of 1% glycopyrronium bromide (GPB) in patients with primary axillary hyperhidrosis

In a first in human, (Phase 1b), double blind, placebo-controlled study in primary axillary hyperhidrosis, safety and efficacy were established for an oil-in-water cream containing 1% glycopyrronium bromide (GPB)[1]. Here we present data of the placebo-controlled dose confirming part over 4 weeks (Phase 3a) while the long-term open-label part (Phase 3b) is ongoing.

Primary objective of this Phase 3a (n=171, 87 m/84 f, 37.6±12.1) was to confirm efficacy by gravimetric measurement of sweat reduction. In addition, improvement of the Hyperhidrosis Disease Severity Score (HDSS) and of the HidroQoL was measured.

The placebo-controlled part (Phase 3a) confirmed safety and efficacy of the 1% GPB cream. Reduction in sweat production at day 29 was statistically higher in the verum group compared to vehicle (FAS, n=155, -197mg vs. -84mg, p=0.0038). At day 29 the number of patients achieving a reduction of sweating ≥50%, ≥75% and ≥90% in the 1% GPB group was statistically higher compared to vehicle. From baseline to day 29 improvement of HDSS (FAS, p=0.0138) and of HidroQoL (FAS, p<0.0001) were statistically significant. Local tolerability was excellent and GPB-related AEs resulted primarily in dry mouth (n=14 in verum vs. n=3 in placebo).

The once daily topical application of 1% GPB in an oil-in-water cream over 4 weeks showed very good efficacy, excellent local tolerability and systemic safety. The long-term open-label part (Phase 3b) over 72 weeks will gather further data to support these initial placebo-controlled results.

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Predicting the potential impact of biologics on cancer survival in patients with psoriasis: a gene expression survival analysis of the Cancer Genome Atlas (TCGA) database

Background: While Tumor Necrosis Factor (TNF), interleukin (IL)17A, and IL23 inhibitors have revolutionized the management of psoriasis,[1] concerns persist regarding their association with increased risk of malignancy.[2,3] Importantly, their safety in patients with a history of, or active malignancy remains unknown. We aimed to evaluate the relationship between TNF, IL-17A, and IL23 gene expression and survival across multiple cancers.

Type of Study: Observational retrospective study

Methods: We classified patients among 31 cancers in The Cancer Genome Atlas (TCGA) as low- and high-expressors of TNF, IL-17A, and IL23A genes. We estimated correlations between gene expression and survival using Cox-proportional hazards models, excluding cancer cohorts with fewer than median number of non-censored events and adjusting p-values with Bonferroni.

Results: Low TNF expression correlated with decreased survival in sarcoma (n=98, HR=1.88 [1.25-2.83], p=0.04) and cutaneous melanoma (n=220, HR=1.54 [1.18-2.02], p=0.03). Low IL23A expression correlated with increased survival in kidney renal cell carcinoma (n=175, HR=0.42 [0.31-0.58], p<0.001). We found that low IL17A expression possibly correlates with improved survival in cutaneous melanoma and decreased survival in head and neck squamous cell carcinoma (non-significant after Bonferroni).

Conclusion: Gene expression survival effects suggest that TNF-inhibitor use may cause survival harm in patients with melanoma and sarcoma, and IL23-inhibitors may cause survival benefit in patients with renal clear cell tumors. These findings mirror reports in animal and other studies,[4-8] providing valuable insights about malignancy risks of immunobiologics in psoriasis. Further investigation will include multivariate models to account for confounders, and exploration of downstream signaling effects using TCGA data.

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A Gain-Switched 311-nm Ti:Sapphire Laser Treatment in Recalcitrant Palmoplantar Pustulosis (PPP)

Introduction: PPP is a specific form of localized pustular psoriasis occurring on the palm and sole. Multiple therapeutic options, including topical and systemic agents as well as phototherapies, are available for PPP; however, treatment outcomes are not satisfactory in most cases. Recently, a gain-switched 311-nm Ti:Sapphire Laser was developed and showed good treatment response in vitiligo and atopic dermatitis.

Aims and Objectives: To investigate the efficacy and safety of the 311-nm Ti:Sapphire Laser in the treatment of PPP.

Material and Methods: A total of 24 patients with PPP were treated with a 311-nm Ti:Sapphire Laser twice a week for up to 32 sessions and had a 3-month follow-up visit. The treatment dose started at 300mJ/cm2 and was increased by 50mJ/cm2 at each subsequent session. The Palmoplantar Pustular Psoriasis Area and Severity Index (PPPASI) score, 5-grade patient satisfaction score, and adverse events were evaluated.

Results: The mean PPPASI score decreased from 8.31±3.31 at baseline to 4.75±2.70 at 16 sessions, 3.26±2.18 at 32 sessions, and 4.05±2.19 at follow-up visit. In the subgroup analysis, smokers and emollients user groups showed better responses in PPPASI (p=0.033, and P=0.027, respectively). Adverse effects, including burning sensation and transient erythema, were limited and well-tolerated.

Conclusion: The 311-nm Ti:Sapphire Laser can be considered as a treatment option for PPP. Moreover, habitual risk factor modifications, such as smoking cessation and steady use of emollients, can impact treatment outcomes in patients with PPP.

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Impact of Obesity and Body Parameters on Pembrolizumab Toxicity and Efficacy in Patients with Advanced Melanoma

Background: In view of evidence that both cancer cachexia and obesity may impact response to cancer therapy, it is important to understand the relationship between BMI, sarcopenia, and immunotherapy. The objective of this paper is to explore the impact of radiographic sarcopenia and BMI on the efficacy and toxicity of pembrolizumab therapy in clinical practice.

Type of Study: Retrospective study

Methods: Patients who underwent pembrolizumab treatment at Duke University Hospital from January 2014 to September 2018 were retrospectively reviewed for baseline characteristics, treatment, outcomes, and survival data. For each patient, CT imaging at treatment start was evaluated to determine simple psoas cross-sectional area and density. Patients in the lowest sex-specific tertile of psoas area were defined as sarcopenic, whereas patients in the lowest sex-specific tertile of density were defined as density-sarcopenic.

Results: Sarcopenia and density-sarcopenia were not significantly associated with treatment toxicity, response, or survival. However, BMI was associated with higher odds of treatment-limiting toxicity. Higher albumin was associated with greater likelihood of disease control, and lower creatinine was associated with a higher rate of toxicity.

Conclusion: These findings indicate that, while psoas cross-sectional area does not appear to predict clinically relevant outcomes, other readily available baseline characteristics such as albumin, creatinine, and BMI may be useful biomarkers to help guide the management of patients undergoing pembrolizumab treatment for advanced melanoma.

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Assessment of the skin acceptability and efficacy of a cosmetic product in the treatment of hypertrichosis in female patients

Background: Treatment of unwanted body hair is a challenging area in cosmetic dermatology. Topical soy isoflavones and derivatives or eflornithine have been utilized in dermatocosmetology for their oestrogenic and antiandrogenic activity

Purpose of the study: To evaluate the efficacy of a formulation containing capryoil glycine 4% in decreasing hair growth on the forearms after topical application for 120 days vs placebo.

Methods: 69 female patients entered the study (age 37 +/- 6). Hair growth was quantified using Trichoscan software on both forearms at 20-fold magnification (analyzed area 0.651 cm2). Hair density (number of hairs/cm2), density vellus hair, density terminal hair, median length of hairs were evaluated. The data were analyzed using ANOVA for repeated measures to evaluate changes during the treatment (T0, T60 and T120) and Student's t test (placebo vs active).

Results: There was a significant decrease on hair density, median and terminal hair at the end of the treatment in the active treated site ($p<0.001$) as measured by Trichoscan software. Direct comparison between active and placebo treated

sites showed no significant differences at T0, but highly significant differences at T120 ($p<0.001$).

Conclusions: The study shows that a cosmetic formulation based on capryoil glycine 4% is highly effective in reducing several parameters related to hair growth and hair thickness vs placebo, thus showing efficacy in the treatment of hypertricosis.

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The Longitudinal Evolution Of Skin Microbiome Of Children From Birth To 10 Years Of Age

The human microbiome is a dynamic ecosystem of microorganisms that influences both health and disease to the human host starting at the time of birth. Building on data published from this subject set examining the changing microbiome during the first year of life, we sought to gain a better understanding of the skin colonization changes from the first year of life through 10 years of age within an individual. Approximately 35 subjects from the original study were followed longitudinally for 10 years assessing both their own skin microbiome as well as that of their mother at 4 additional timepoints (36-48 months, 5-6 years, 6-7 years, 9-10 years). Results from the initial study showed the abundance of Staphylococcus and Streptococcus on each sampled body part decreased resulting in an increased diversity and evenness of the microbial populations as the subjects approached 1 year of age. Despite the observed decrease in abundance of Staphylococcus and Streptococcus, Streptococcus remained the dominant member of the skin microbiome through age 10, which is distinct from that of their corresponding mothers (i.e. adults) whose microbiome is dominated by Propionibacterium. It was also observed that while the maternal microbiome remained consistent over time, the children in the study had a richer, more diverse microbiome and changes in the microbiome were a function of body site and age. Additional studies are needed to confirm these findings and to understand how these changes impact the physiological maturation of the child.

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Lebrikizumab, a High-Affinity IL-13 Inhibitor, Demonstrates Rapid and Clinically Meaningful Improvements in Quality of Life Measures in a Phase 2b Trial of Moderate-to-Severe Atopic Dermatitis Patients

LEB is a novel, high-affinity, monoclonal antibody targeting IL-13 that selectively prevents formation of the IL-13Rα1/IL-4Rα heterodimer receptor signaling complex, while leaving endogenous IL-13 regulation intact. Adults (EASI ≥16, IGA ≥3, chronic AD ≥1y) were randomized 3:3:3:2 to subcutaneous LEB 125mg Q4W (250mg loading dose [LD]; n=73), 250mg Q4W (500mg LD; n=80), 250mg Q2W (500mg LD at Baseline and Week [Wk] 2; n=75) or placebo (n=52).[1] Endpoints included EASI mean percent (%) change from Baseline (cfB) at Wk16 (primary), pruritus NRS ≥4-point improvement and %cFB, and sleep loss due to pruritus %cfB. Additional assessments included POEM cfB, DLQI cfB, DLQI 0/1 (no impact of AD on QoL), and Global Assessment of Change-AD.

LEB arms showed dose-dependent, statistically significant improvement in the primary endpoint vs. placebo (125mg Q4W [-62.3%;P<0.05]/250mg Q4W [-69.2%;P<0.01]/250mg Q2W [72.1%;P<0.001] vs. placebo [41.1%]).[1] LEB improved pruritus by Day 2, with further improvement in pruritus NRS to Wk16 (≥4-point improvement: 41.8%/47.4%/70.0%[P<0.001] vs. 27.3%; %cfB: 36.9[P<0.01]/-48.6[P<0.001]/-61.8[P<0.0001] vs. 6.8). LEB improved sleep by Wk1, with further improvement to Wk16 (sleep loss score %cfB: 48.7/ 53.0[P<0.05]/ 64.7[P<0.01] vs. 20.2). LEB improved disease severity at Wk16 (POEM cfB: 8.9/ 11.4/ 12.4 vs. 5.8) and dermatology health-related QoL by Wk8 (DLQI cfB: -8.0/-8.6/-9.3 vs. -3.1) and by Wk16 (cfB: 7.9/ 9.2/ 9.7 vs. 5.9; DLQI 0/1: 13.6%/32.3%/39.0% vs. 16.7%).%). At Wk16, 33.9%/45.2%/64.4% of LEB-treated patients vs. 20.8% placebo rated their AD as 1, much better.

Selective blockade of IL-13 with LEB improved symptoms and QoL in a rapid, dose-dependent manner across a range of AD-specific and other measures, including pruritus and sleep.

Author(s):

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Dupilumab Significantly Improves Atopic Dermatitis in Children Aged =6 to <12 years: Results From Phase 3 Trial (LIBERTY AD PEDS)

Background: Dupilumab is approved in the USA for subcutaneous administration every 2 weeks (q2w) for the treatment of patients aged ≥12 years with moderate-to-severe atopic dermatitis (AD) inadequately controlled with topical prescription therapies or when those therapies are not advisable. We present dupilumab efficacy and safety data in children aged ≥6 to <12 years with severe AD.

Methods: In this double-blind trial (NCT03345914), children aged ≥6 to <12 years (minimum weight 15kg) with severe AD (Investigator's Global Assessment [IGA] score=4) were randomized 1:1:1 to subcutaneous dupilumab q2w (100mg if baseline weight <30kg, 200mg if ≥30kg), every 4 weeks (q4w, 300mg regardless of weight), or placebo for 16 weeks. From Day –14, all patients initiated standardized treatment with medium-potency topical corticosteroids (TCS).

Results: 367 patients were randomized (q2w/q4w/placebo groups, n=122/n=122/n=123). At Week 16, 29.5%/32.8%/11.4% of patients receiving q2w/q4w/placebo achieved IGA scores of 0/1 (clear/almost clear); 67.2%/69.7%/26.8% achieved ≥75% improvement from baseline in Eczema Area and Severity Index (EASI). Least squares (standard error) mean percent change in EASI and Peak Pruritus Numerical Rating Scale were –78.4(2.35)/–82.1(2.37)/–48.6(2.46) and –57.0 (2.77)/–54.6 (2.89)/–25.9(2.90), respectively (P<0.001 vs placebo for all comparisons). Serious adverse events (AEs) and AE-related treatment discontinuations were rare; injection-site reactions and conjunctivitis were more common with dupilumab than with placebo.

Conclusion: Dupilumab+TCS showed clinically meaningful and statistically significant improvement in AD signs and symptoms in children aged ≥6 to <12 years with severe AD and was well tolerated with no new safety signals compared with adults and adolescents.

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First in Human use of a Novel In Vivo Gene Therapy for the Treatment of Autosomal Recessive Congenital Ichthyosis: Results of a Phase I/II Placebo Controlled Trial

Introduction: Autosomal recessive congenital ichthyosis (ARCI) is a rare, monogenic cornification disorder with erythema, epidermal scaling, ectropion, and impaired skin barrier function. Mutations in TGM1 encoding transglutaminase 1 (TGase1) are the predominant cause of ARCI, affecting >55% of US ARCI patients. Current therapeutic options for treating ARCI provide limited symptomatic relief without addressing the underlying genetic defect, necessitating novel targeted therapeutics. KB105 is a novel, convenient, first in class, off-the-shelf disease correcting topical gene therapy for the treatment of TGM1-deficient ARCI.

Methods: Adult subjects were treated topically with KB105 or placebo in this intra-patient placebo-controlled Phase I/II study (NCT04047732). Outcome measures included safety and tolerability, TGase1 expression and activity by immunofluorescence microscopy, and evaluation of disease severity based on Investigator's Global Assessment (IGA) and ichthyosis scales.

Results: Three adult subjects (ages 20, 24, and 39) with a confirmed genetic diagnosis received multiple KB105 or placebo treatments in the selected target areas. KB105 was well-tolerated by all three subjects with no reported drug related adverse events or immune response. A robust increase in correctly localized TGase1 in situ activity and expression, and reduction in ichthyosis severity was observed in KB105-treated areas in all three patients.

Conclusion: Topical application of KB105, the first and only corrective therapeutic candidate for TGM1-deficient ARCI was safe, well-tolerated and efficacious in all 3 treated adults. With safety and preliminary efficacy established, the study will enroll pediatric subjects in 1H 2020. A multi-center pivotal Phase 3 study is planned following completion of Phase I/II study.

Author(s):

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Topical application of methotrexate protects from imiquimod-induced psoriasis-like local skin inflammation and secondary sensitization at a distant site

Background: Psoriasis is a chronic, recurrent inflammatory skin disease. Methotrexate (MTX)-loaded dissolving microneedles (MNs) have been demonstrated to be more efficient and safe than conventional systemic therapy for psoriasis. It is of practical significance to explore whether topical MTX treatment can prevent the relapse of psoriasis while attenuating local skin inflammation and to elucidate the potential therapeutic mechanism of it.

Type of Study: Basic Science

Methods: Psoriasis-like dermatitis was first induced on the left ear skin of mice by topical imiquimod (IMQ) treatment. The histopathological and immunohistochemical (Ki67, CD11c and CD3) examinations of MNs-treated skin lesions were carried out. The composition of IL-17A-producing T (T17) cells in skin and draining lymph nodes (dLNs) was also analyzed. The right ear was subsequently re-challenged by IMQ to assess the possible effect of MTX-loaded MNs on secondary inflamed skin at a distant site.

Results: Topical application of IMQ induced much milder epidermal hyperplasia and inflammatory infiltration after treatment with MTX-loaded MNs. Flow cytometric analysis indicated that the accumulation of Vγ4+ γδT17 cells in MNs-treated left ear skin and the dLNs were both markedly inhibited, whereas αβT17 cells were barely affected. Furthermore, the subsequent development of IMQ-induced dermatitis on the right ear was also significantly suppressed compared with untreated mice.

Conclusion: MTX-loaded MNs can not only ameliorate IMQ-induced psoriasis-like inflammation in targeted skin lesion but also show a concomitant antipsoriatic effect against secondary IMQ sensitization at a distant site by impairing the expansion of Vγ4+ γδT17 cells in both MNs-treated skin and dLNs.

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Efficacy and safety of bimekizumab in patients with moderate-to-severe plaque psoriasis: results from BE VIVID, a 52-week Phase 3, randomized, double-blinded, ustekinumab- and placebo-controlled study

Background: Psoriasis is the archetypal Th17-driven disease; increasing evidence suggests both IL-17A and IL-17F influence its immunopathogenesis. Bimekizumab selectively binds and neutralizes IL-17A and IL-17F.

Type of study: Randomized, double-blinded, pivotal Phase 3 superiority study.

Methods: In BE VIVID (NCT03370133), 567 patients with moderate-to-severe psoriasis were randomized 4:2:1 to bimekizumab (320mg Q4W), ustekinumab (45/90mg weight-based at baseline and Week 4, then Q12W), or placebo (Q4W through Week 16 then bimekizumab 320mg Q4W). Co-primary endpoints were PASI90 and IGA 0/1 vs. placebo at Week 16. Secondary/other outcomes included Week 16 PASI100; Week 52 PASI90, IGA 0/1, and PASI100; and safety. Missing data were imputed as non-response.

Results: Significantly more patients achieved PASI90 and IGA 0/1 with bimekizumab (85.0% and 84.1%, respectively) at Week 16 than ustekinumab (49.7% and 53.4%) or placebo (4.8% and 4.8%; all $p<0.001$); 58.6% of bimekizumab-treated patients achieved PASI100 vs. 20.9% with ustekinumab and 0% with placebo. At Week 52, bimekizumab-treated patients achieved PASI90, IGA 0/1, and PASI100 response rates of 81.6%, 77.9%, and 64.2%, respectively, vs. 55.8%, 60.7%, and 38.0% with ustekinumab. Over 52 weeks, incidence of serious TEAEs was 6.1% with bimekizumab vs. 7.4% with ustekinumab. Four deaths occurred (two bimekizumab, one ustekinumab, one placebo), all considered unrelated to treatment. Most common TEAEs with bimekizumab were nasopharyngitis and oral candidiasis.

Conclusion: Bimekizumab was consistently superior to ustekinumab and placebo, and was generally well tolerated with a safety profile consistent with earlier Phase 2 studies, further supporting dual neutralization of IL-17A and IL-17F for treatment of psoriasis.

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Tepilamide Fumarate a Pro-Drug of Mono Methyl Fumarate is Efficacious in Treating Plaque Psoriasis: Overview of A Phase 2b Study

Background and objectives: Monomethyl fumarate is the active moiety of tepilamide fumarate being developed for the treatment of moderate to severe plaque psoriasis. We summarize the results of a phase 2b study conducted in US.

Methods: This randomized double blind study was conducted in 76 US sites in psoriasis patients who had PASI scores ≥12, IGA Scores ≥3, and BSA ≥10%. 426 subjects were randomized in a 1:1:1:1 ratio into 3 PPC-06 dose arms: 400 mg QD, 400 mg BID, 600 mg BID, and placebo. A 5-week titration phase was followed by 19 weeks of treatment.

Results: At week 24 , PASI-75/90 was achieved by 44.3%/ 18.8%, 47.2%/20.9% and 39.7%/17.3% patients in PPC-06 600 mg BID, 400 mg BID and 400 mg QD groups, compared to 20%/5.5% in the placebo group ($p<0.01$). Additionally, 44.4%, 41.4% and 35.7% of patients in the PPC-06 600 mg BID, 400 mg BID and 400 mg QD groups, achieved an IGA score of 0 or 1 at week 24, compared to 22% in the placebo group ($p <0.05$). PPC-06 showed significant reduction in PSSI scores and numerically higher reduction in NAPSI scores. Mild to moderate diarrhea was the most common TEAE reported ranging from 7-23% in PPC-06 treatment groups. No new or unexpected adverse events related to PPC-06 were reported compared to what is known for fumarate drugs.

Conclusion: PPC-06 may have potential to serve as an important therapeutic option for psoriasis patients in US as there are few oral treatments currently available.

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Genetics of itch: results from the largest whole genome sequencing study of Atopic Dermatitis with chronic pruritus

Atopic dermatitis (AD) is a highly heritable disorder with estimates reaching 75%. We have conducted a whole-genome sequencing association analysis of 540 AD patients with chronic pruritus associated with AD and 600 controls. The participants were coming from VP-VLY-686-2102 and replicated in VP-VLY-686-3101. The 2102 study was a randomized, double-blind, placebo-controlled, multi-center study in 168 patients with chronic pruritus associated with AD. The inclusion criteria included: chronic (≥ 6 weeks) itch related to AD, refractory to treatment by patient history, average itch score by visual analog score (VAS) of ≥ 70 mm (out of 100 mm), SCORAD: AD1 <80; Body surface area coverage: AD1 – N/A; AD2 ≥1%.

Using linear regression, we directly tested the association between 14,322,979 SNPs and Worst Itch (VAS). Among the top loci identified as modifying change of VAS were variants located within the INADL gene. INADL is a gene affecting tight junctions that have been implicated in AD. Likely impairment in tight junctions contributes to the barrier dysfunction and immune dysregulation observed in AD subjects. Baseline itch was also associated with variants in ABCA6 and PRIM2, ATP2C1. Moreover, in our case-control analysis, we have detected several interesting significant signals, MAF>5% including variants within IL12B and ATP2C1.

The identified variants could lead to further understanding of the genetic underpinnings of itch. Pruritus has a large impact on AD patients' quality of life; the results of this analysis could lead to novel biomarkers, allow for stratification of treatment response.

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Efficacy and Safety of Oral Difelikefalin in Chronic Kidney Disease Patients with Moderate-to-Severe Pruritus: A Randomised, Placebo-Controlled, Phase 2 Trial

Background: Pruritus is a common and burdensome condition in non-dialysis and hemodialysis patients with chronic kidney disease (CKD), for which there are no approved treatments. Difelikefalin (DFK) is a novel peripherally restricted, selective kappa opioid receptor agonist being developed for the treatment of pruritus1.

Type of Study: A phase 2, double-blind, randomised, placebo-controlled, dose-ranging study.

Methods: In this study, 225 non-dialysis CKD patients and 46 hemodialysis patients with moderate-to-severe pruritus were equally randomized to oral DFK (0.25, 0.5, or 1.0 mg) or placebo once daily for 12 weeks. The primary endpoint was the change from baseline at week 12 in the weekly mean of daily Worst Itching Intensity Numerical Rating Scale (WI-NRS) scores. Secondary efficacy endpoints included itch-related quality of life (QOL) measures and proportion of patients with a change of ≥3 points in WI-NRS at week 12.

Results: Baseline WI-NRS scores were 7.1 (SD ±1.2) in DFK (all doses) and 7.0 (SD ±1.1) in placebo. The primary endpoint was met in the DFK 1.0 mg group vs. placebo (-4.4 vs. -3.3, p=0.018). Treatment effect was evident at week 2 and maintained through week 12. A positive dose-related trend was observed for all secondary endpoints. Most commonly reported adverse events in DFK were dizziness, fall, diarrhea, constipation, and worsening GERD.

Conclusion: Oral DFK 1.0 mg daily was identified as the optimal dose based on significant reduction in itch intensity, numerical improvement in itch-related QOL, and an acceptable safety profile. Further evaluation of DFK is warranted in CKD patients with pruritus, where there is a high unmet need.

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The effects of Microfocused Ultrasound in facial rejuvenation: a clinical and experimental study based on immunohistochemical assay

Microfocused ultrasound (MFU) utilizes thermal energy to achieve the structure of the facial aponeurotic muscle system (SMAS), producing fibrosis, improving sagging and lifting effect. Objective: To investigate the effects of Microfocused Ultrasound on facial rejuvenation. Method: 30 participants, 45 to 60 years old, Fitzpatrick phototype 2 to 4, underwent a 45-day reassessment of the MFU, full face unilateral application (control and treated side), frequency varying according to the region between 1, 5mm, 3mm, 4.5mm, dose 0.1 to 0.2 joules per point. Among the volunteers, one underwent rhytidoplasty, two underwent belfaroplasty 45 days after MFU application. Evaluation through validated questionnaires, photographs analyzed using Dolphin imaging 2 and 3D software, histology with optical microscopy and immunohistochemical analysis. Results: Increased lateral eyelid line and reduced paralateronasal projection signifying improved facial sagging, increased number and size of fibroblasts, blood vessels and inflammatory cells ($p = 0.025$, $p = 0.006$, $p = 0.003$) respectively, predominance of collagen type I on the treated side, marker IHQ Adipophylline and presence of macrophages (CD68), signaling fibrosis and necrotic tissue. Conclusion: Analyzes of the tissue removed after face and eyelid surgeries indicate the positive effects of MFU on SMAS, producing the thermal reaction that generates

lifting effect and, consequently, the clinical responses described after the analysis of the side treated with photography, software and questionnaires.

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Efficacy and safety of bimekizumab in patients with moderate-to-severe plaque psoriasis: results from BE READY, a 56-week Phase 3, randomized, double-blinded, placebo-controlled study with randomized withdrawal

Background: Increasing evidence indicates that IL-17A and IL-17F contribute to the immunopathogenesis of psoriasis, a mainly Th17-driven disease. Bimekizumab selectively binds to and neutralizes both IL-17A and IL-17F.
Type of study: Randomized, double-blinded, placebo-controlled, pivotal Phase 3 study with randomized withdrawal.

Methods: In BE READY (NCT03410992), 435 patients with moderate-to-severe psoriasis were randomized 4:1 to bimekizumab 320mg Q4W or placebo. Week 16 PASI90 responders were re-randomized 1:1:1 to bimekizumab 320mg Q8W (n=100), Q4W (n=106), or placebo (n=105) through Week 56. Relapse definition was <PASI75 from Week 20. Co-primary endpoints were PASI90 and IGA 0/1 at Week 16. Secondary/other outcomes included PASI100 (Week 16); PASI90, IGA 0/1, and PASI100 (Week 56); and safety. Missing data: imputed as non-response.

Results: At Week 16, more patients achieved PASI90 (90.8% vs. 1.2%), IGA 0/1 (92.6% vs. 1.2%), and PASI100 (68.2% vs. 1.2%) with bimekizumab than placebo, respectively (all p<0.001). At Week 56, PASI90 (320mg Q4W/Q8W 91.0%, Q4W/Q4W 86.8%) and IGA 0/1 (320mg Q4W/Q8W 90.0%, Q4W/Q4W 86.8%) were maintained on bimekizumab. Week 56 PASI100 on bimekizumab was 83.0% (320mg Q4W/Q8W) and 70.8% (Q4W/Q4W). At Week 56 PASI90 was reduced (16.2%) in patients re-randomized to placebo; median time to relapse was ~28 weeks. Most common TEAEs with bimekizumab were nasopharyngitis, oral candidiasis, and upper respiratory tract infection.

Conclusion: In this pivotal Phase 3 withdrawal study, bimekizumab provided significantly higher response rates vs. placebo at Week 16. Responses were maintained through Week 56 with continuous bimekizumab treatment. Bimekizumab was generally well tolerated, with no unexpected safety findings.

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Independent validation of a 40-gene expression profile for metastasis risk stratification from primary cutaneous squamous cell carcinoma

Cutaneous squamous cell carcinoma (SCC) incidence has risen rapidly during the past 30 years. Of the 1,000,000 SCC patients diagnosed annually[1], 3-5% will develop regional or distant metastasis. Management decisions for high-risk SCC are complicated by limited accuracy of current staging systems. Due to the need for reliable prognostic biomarkers, we developed a 40-gene expression profile (40-GEP) test to stratify the risk of regional or distant metastasis. Here, we report validation of the 40-GEP in an independent cohort of primary SCC tumors from patients with known outcomes (multicenter, archival, n=321), of which 93% were high-risk by National Comprehensive Cancer Network (NCCN) guidelines. The 40-GEP classified three risk groups: Class 1/Low, Class 2A/High, and Class 2B/Highest having 3-year metastasis-free survival rates of 91.6%, 80.6%, and 44.0%, respectively. The 40-GEP had an improved positive predictive value of 60% in the highest risk group (n=25) compared to current risk assessment methods: AJCC (22%), Brigham and Women's Hospital (35.6%), and NCCN (16.7%). Multivariate analysis demonstrated statistically significant independent prognostic value of molecular testing in addition to histopathological staging. Hazard ratios were 2.17 and 9.34 for 40-GEP Class 2A and 2B, versus 2.98 for AJCC (p<0.0001) and 2.32 for BWH (p<0.006). The 40-GEP may benefit high-risk Class 2 patients by facilitating a more specific allocation of surgical, imaging, and therapeutic interventions, while reducing unnecessary treatments for low-risk Class 1 patients. Use of the 40-GEP to complement existing staging methods has potential to improve risk assessment and clinical decision making for appropriate SCC patient management.

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Secukinumab is Highly Efficacious and Has a Favorable Safety Profile in Pediatric Patients With Moderate-to-Severe Plaque Psoriasis

Background: Psoriasis affects approximately 1% of children and adolescents; few treatment options are available, resulting in a high unmet medical need. This study investigated the efficacy and safety of 2 secukinumab dosing regimens in pediatric patients with moderate-to-severe plaque psoriasis.

Methods: In this ongoing, randomized, multicenter, open-label study (NCT03668613), patients aged 6 to <18 years with moderate-to-severe plaque psoriasis were stratified by weight and randomized 1:1 to receive low-dose (LD; 75-150 mg; n = 42) or high-dose (HD; 75-300 mg; n = 42) subcutaneous secukinumab. Efficacy was determined at week 12 according to PASI75/90/100 and IGA mod 2011 0/1 responses (nonresponder imputation); quality of life (QOL) was determined using Children's DLQI (CDLQI) 0/1 responses. Safety was evaluated through week 16 by the incidence of treatment-emergent adverse events (TEAEs).

Results: Predictive log odds ratios from a Bayesian analysis for PASI75, PASI90, and IGA 0/1 responses at week 12 suggest benefit over historical placebo for both regimens (probability of [log-OR > 0] = 1). At week 12, achievement of responses was similar in both arms (PASI75/90/100: LD, 92.9%/69.0%/59.5%; HD, 92.9%/76.2%/54.8% and IGA 0/1: LD, 78.6%; HD, 81.0%). Patients in both arms experienced improved QOL at week 12 as measured by CDLQI 0/1 responses (LD, 50.0%; HD, 61.9%). TEAEs were comparable between treatment arms and consistent with the known safety profile of secukinumab.

Conclusion: Across both doses, secukinumab is highly efficacious in rapidly improving skin symptoms and QOL in pediatric patients with moderate-to-severe plaque psoriasis and has a favorable safety profile.

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Efficacy and safety of tralokinumab with concomitant topical corticosteroid in adult patients with moderate-to-severe atopic dermatitis: Results from the 32-week Phase 3 ECZTRA 3 trial

Background: Atopic dermatitis (AD) is a chronic, heterogeneous, inflammatory skin disease characterized by itch and eczematous lesions. Interleukin (IL)-13 is a key type-2 cytokine involved in AD inflammation. Tralokinumab is a fully human monoclonal antibody that specifically neutralizes IL-13. We report the efficacy and safety of tralokinumab+topical corticosteroid (TCS) in moderate-to-severe AD.

Type of study: Phase 3

Methods: This was a double-blind, randomized 32-week (wk) study (NCT03363854). Patients with moderate-to-severe AD were randomized 2:1 to subcutaneous tralokinumab 300 mg every 2wks (Q2W)+TCS or control (placebo Q2W+TCS). Primary endpoints were Investigator's Global Assessment (IGA)-0/1 and Eczema Area and Severity Index (EASI)-75. At wk16, tralokinumab responders (IGA-0/1 and/or EASI-75) were re-randomized 1:1 to tralokinumab Q2W or Q4W+TCS for

an additional 16wks. Control responders continued control, all nonresponders received tralokinumab Q2W+TCS.

Results: At baseline, 46.3% of 380 randomized patients had severe AD (IGA-4); mean EASI was 29.4. At wk16, significantly more tralokinumab-treated patients achieved IGA-0/1 (38.9%) and EASI-75 (56.0%) than control patients (26.2% and 35.7%; p=0.015 and p<0.001). Rescue treatment was reported by 2.8% of tralokinumab and 10.2% of control patients. As assessed by IGA-0/1 and EASI-75, 89.6% and 92.5% of wk16 tralokinumab responders maintained response at wk32 with tralokinumab Q2W+TCS, 77.6% and 90.8% with tralokinumab Q4W+TCS. Among wk16 tralokinumab nonresponders, 30.5% and 55.8% achieved IGA-0/1 and EASI-75 at wk32. The overall adverse event rate was similar across treatment groups and did not increase with prolonged treatment.

Conclusion: Tralokinumab 300 mg Q2W+TCS was efficacious in treating moderate-to-severe AD, with a favorable safety profile.

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Efficacy and safety of tralokinumab monotherapy in adult patients with moderate-to-severe atopic dermatitis: Results from two 52-week Phase 3 trials (ECZTRA 1 and ECZTRA 2)

Background: Atopic dermatitis (AD) is a chronic, heterogeneous inflammatory skin disease. Tralokinumab, a fully human monoclonal antibody, specifically neutralizes interleukin (IL)-13, a key type-2 cytokine involved in AD inflammation. We report two double-blinded, randomized, placebo-controlled 52-week (wk) trials of tralokinumab monotherapy in moderate-to-severe AD (ECZTRA 1 and ECZTRA 2).

Type of study: Phase 3

Methods: Patients were randomized 3:1 to subcutaneous tralokinumab 300 mg or placebo every 2wks (Q2W) for 16wks. Primary endpoints were IGA-0/1 and EASI-75, achieved without use of rescue medication. At wk16, tralokinumab responders (IGA-0/1 and/or EASI-75) were re-randomized 2:2:1 to tralokinumab Q2W or Q4W, or placebo for an additional 36wks. Placebo responders continued on placebo and all non-responders received open-label tralokinumab Q2W with optional topical corticosteroid (TCS).

Results: Of 802/794 patients randomized in ECZTRA 1/2, 50.7%/48.7% had severe AD (IGA-4); mean EASIs were 32.4/32.2 at baseline. At wk16, IGA-0/1 responses were 15.8% (tralokinumab) vs. 7.1% (placebo; p=0.002) and 22.2% vs. 10.9% (p<0.001) in ECZTRA 1/2, respectively. EASI-75 responses were 25.0% vs. 12.7% and 33.2% vs. 11.4% (both p<0.001). At wk52, 59.6% and 55.8% maintained EASI-75 with tralokinumab Q2W; Q4W responses were similar. Among non-responders at wk16, transferred to open-label tralokinumab+optional TCS, 50.4% and 42.3% reached EASI-75 and 24.3% and 22.5% reached IGA 0/1 at wk52. The overall adverse event rate was similar between tralokinumab Q2W and placebo over 16wks; adverse-event profile over 52wks was comparable to the initial 16wks.

Conclusion: Tralokinumab 300 mg was efficacious in the treatment of moderate-to-severe AD, with a favorable safety profile.

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Important Measures for Psoriasis beyond PASI 100 – Patient-Reported Symptoms and Molecular Data from Patients Treated with Guselkumab or Adalimumab – A Sub-analysis from VOYAGE 1&2

Objectives: To evaluate patient-reported symptoms and normalization of gene expression in cleared lesional skin (CLS) among Week24 PASI100 responders in the VOYAGE trials.
Materials & Methods: The Psoriasis Symptoms and Signs Diary (PSSD) assessed psoriasis symptoms. Transcriptomic profiles were evaluated by microarray in lesional skin (LS) and non-lesional skin (NL) at baseline from 37 patients in VOYAGE 1, and CLS from a subset of PASI100 responders treated with guselkumab (n=16) or adalimumab (n=5).

Results: Baseline PSSD symptom scores were comparable among Week24 guselkumab and adalimumab PASI100 responders in VOYAGE 1&2. A higher proportion of guselkumab vs. adalimumab patients achieved a PSSD symptom 0 score (54.6% vs. 42.9%,$p<0.05$) at Week24. Over 2,300 genes were identified as dysregulated between LS and NL skin at baseline, defining the “psoriasis transcriptome”. After treatment, expression of a majority of these genes was normalized in CLS to baseline NL skin levels. Dysregulation of 10 genes was insufficiently (<75%) normalized in CLS from patients with persistent symptoms. Notably, in CLS from adalimumab-treated patients, 9 of these genes, including the psoriasis-specific IL17A-induced PRR9 and two others localized to the epidermal differentiation complex (EDC), were insufficiently normalized. Four genes, none of which localize to the EDC, were insufficiently normalized in CLS in guselkumab-treated patients.

Conclusion: Some PASI100 responders experience persistent symptoms despite achieving clear skin. Persistently dysregulated gene expression in CLS may account, in part, for persistence of psoriasis-associated symptoms. Importantly, clearing skin with drugs utilizing different mechanisms of action may lead to differential consequences for patients.

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Comparing the Efficacy of Combination of Microneedling and 10% Trichloroacetic acid Peels Versus Carbon dioxide Laser Resurfacing in the Treatment of Infraorbital Dark Circles

Background: Infraorbital dark circles of the lower eyelids are a cosmetic problem, especially with age.1-4 This study aimed at the comparing the efficacy of combination of microneedling and 10% trichloroacetic acid peels versus carbon dioxide laser resurfacing in the treatment of infraorbital dark circles.

Methods: In this clinical trial study 62 patients with infraorbital dark circles were evaluated. The first group were treated with Automatic Microneedle Therapy System-Handhold and topical application of 10% TCA solution to each infraorbital area for five minutes every moth and the second group received Carbon dioxide laser resurfacing procedure every month. The patients were treated for three consecutive months. Subjects in both studies were followed-up for blinded-investigator assessment of infraorbital hyperpigmentation, adverse events, and improvement compared to baseline.

Results: The laser resurfacing procedure, in blinded-investigator assessment did not demonstrate a significant improvement in infraorbital hyperpigmentation at day 90 ($P = 0.24$). The combination of microneedling and 10% trichloroacetic acid peels significantly improved infraorbital hyperpigmentation by day 90, with improvement maintained

through day 180 (P = 0.012 and 0.002, respectively). Adverse events were mild and temporary in both groups including 7 (22.5%) of the patients with transient infraorbital hyperpigmentation postoperatively lasting 4 weeks in laser groups and transient erythema in 18 (58 %) of the patients in combination group that lasting for maximally one week.

Conclusion: Treatment with the Carbon dioxide laser resurfacing did not produce a significant improvement in infraorbital hyperpigmentation. However, combination of microneedling and 10% trichloroacetic acid peels resulted in significant improvement in hyperpigmentation.

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Evaluation of the efficacy and safety of a 532/1064nm wavelength picosecond neodymium:yttrium aluminum garnet (Nd:YAG) laser for the treatment of pigmented lesions from chronic photodamage

Background/Objective: Chronic ultraviolet light exposure produces undesirable cutaneous pigmentation. Since melanosomes have submicrosecond thermal relaxation times, ultra-short picosecond pulse durations selectively confine photoacoustic and photothermal effects to these structures. This study evaluated the safety and efficacy of a 532/1064nm wavelength picosecond neodymium:yttrium aluminum garnet (Nd:YAG) laser on pigmented lesions from chronic photodamage.

Materials/Methods: The study was a single-center, prospective, open-label clinical trial including 23 Caucasian subjects (21 female, 2 male) with a mean age of 56±9 years and Fitzpatrick skin types I-III. All subjects received 3 monthly facial treatments, with optional treatment of dorsal hands concurrently. Follow-up visits occurred at 1 month (1M) and 3 months (3M) following the 3rd session. Treatment was performed at 532nm using an 800ps pulse duration, 4-6mm spot size, and 0.2-0.6J/cm2 fluence. Improvement was assessed by a 5-point overall improvement scale (investigator and subjects) and lesion-specific 5-point clearance scale (investigator only). Subjects evaluated procedural discomfort using a 0-10 visual analog scale (VAS). Presence and severity of erythema, edema, and purpura were evaluated immediately post-procedure, as was downtime duration after each treatment. Subject satisfaction was evaluated with a 5-point Likert scale. Melanin index was measured at all visits. Safety was monitored throughout the study.

Results: At 1M/3M, 86%/78% and 86%/86% of facial and hand lesions, respectively, showed excellent investigator-graded improvement. Likewise, 95%/91% and 100%/89% of facial and hand lesions, respectively, demonstrated excellent investigator-graded clearance. Melanin index at 1M/3M was significantly improved in 100%/95% of subjects. Procedural discomfort was mild, with a mean VAS score of 4.4±2.5. Mean subject-reported downtime was 2.1±2.1 days. One serious adverse event occurred, unrelated to treatment. At 1M/3M, 95%/91% subjects were satisfied to very satisfied.

Conclusion: The use of a 532nm picosecond wavelength is safe and effective for the treatment of pigmented lesions due to chronic photodamage on the face and hands.

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Melanocortin receptor 1 agonist Dersimelagon in erythropoietic protoporphyria: A Multicenter Double-Blind Placebo Controlled Study of 102 Patients

Background: Dersimelagon (MT-7117) is a novel synthetic, orally-administered, non-peptide small molecule selective melanocortin-1 receptor (MC1R) agonist with a potential for being effective to increase pain free light exposure in patients with a history of phototoxicity from the rare debilitating erythropoietic protoporphyria (EPP) and X-Linked Protoporphyria (XLP). We report the efficacy, tolerability, and safety of MT-7117 in these subjects.

Type of Study: Phase 2 trial

Methods: MT-7117-A01 is a multi-center, phase 2, randomized, double-blind, placebo-controlled study with 16-week double-blind treatment. A total of 102 subjects were randomized 1:1:1 in 3 different treatment groups (100 mg/d MT-7117, 300 mg/d MT-7117, and placebo). The primary efficacy endpoint was the change from baseline in average daily time (minutes) to first prodromal symptom (warning signs such as burning, tingling, itching) associated with sunlight exposure between 1-hour post sunrise and 1-hour pre-sunset at Week 16.

Results: Demographics were balanced in the PBO (n=35), 100 mg MT-7117 (n=33), and 300 mg MT-7117 (n=34) arms. Analysis of the primary endpoint showed a significant improvement in average daily time (>50 minutes) to first prodromal symptom in MT-7117 subjects compared to placebo subjects for the 100 mg ($p<0.008$) and 300 mg ($p<0.003$) cohorts at Week 16. MT-7117 was generally safe and well tolerated.

Conclusion: This is the first demonstration in a double-blind, placebo-controlled study of an oral, once-a-day investigational treatment, to protect against light induced phototoxic reactions in patients with EPP or XLP. The overall safety and efficacy profile presented here supports advancement of MT-7117 into pivotal longer-term clinical studies.

JAMA Dermatol. 2017;153(8):789-796.

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Injectable Platelet Rich Fibrin in Atrophic Acne Scar

Introduction & Background: Atrophic scarring is permanent complication of acne. In this study, a liquid formulation of platelet rich fibrin(PRF) termed injectable-PRF without use of anti-coagulants was investigated as an adjuvant for acne-scar treatment..

Methodology: 20 patients with Atrophic acne-scar excluding ice pick scar were enrolled. 5 ml of patient's blood was collected in 2 PRF vial, centrifuged @1000rpm x 1min, thus obtained Injectable-PRF, was injected in acne scars on right side and Normal-Saline(NS) on left side of face. Microneedling(1mm) was done on both sides. Procedure was done every 15th day till 6th sittings. Response was evaluated by Goodman and Baron's scale every visit till 3rd months and at the end of 6th months and was analysed by blinded statistician.

Results: There was a statistically significant difference at the end($p<0.05$). 16% patient showed marked improvement on the side of I-PRF. 48% improved moderately on I-PRF side and 36% on NS side. 50% decrease in PGA on I-PRF side and 41% on NS side was seen.

Discussion: Injectable-PRF, 4th generation of platelet concentrate. It after injection when comes in contact with tissue gets coagulated and forms a dense fibrin network with leukocytes, cytokines, structural glycoproteins and also growth factors

which are released in span of ⩾7 day and acts as a scaffold for collagen formation. Acts as temporary filler(4-5 days).

Conclusion: Injectable-PRF, thus opening a venture proves to be a feasible, safe, simple and inexpensive modality for treatment of atrophic acne-scars. More studies are needed to prove potential applications of Injectable-PRF.

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Improvement in the Appearance of Cellulite Resulting from a Single Treatment with Acoustic Subcision: Interim Findings from a Multi-Center Pivotal Trial

Background: A rapid acoustic pulse (RAP) device producing high intensity acoustic shock waves at 50 Hz has potential to improve the appearance of cellulite through disruption of the subcutaneous fibrous structures (i.e. acoustic subcision). In a prior proof-of-concept (POC) study, appearance of cellulite in five patients improved following a single RAP session1,2. A multi-center pivotal study was initiated and is ongoing. Interim safety, tolerability and efficacy results are provided.

Type of Study: IRB approved multi-center prospective pivotal clinical trial. Interim findings.

Methods: Grade II cellulite in 67 women was treated in a single 19-33 minute RAP session. Adverse events and tolerability were recorded after treatment. Results from 12-week follow up of the first 26 patients were evaluated. Preliminary assessment of efficacy was measure by having four blinded medical professionals correctly identify the 12-week post-treatment photographs from randomly placed side-by-side comparison of before/after photographs.

Results: No adverse events were noted other than mild erythema at treatment sites. Overall pain score during RAP treatment was 2.4 (1-10 pain scale with 10 being the worse). For the first 26 patients, the blinded panel correctly identified the 12-week post-treatment photographs at a rate of 94.2%.

Conclusions: Interim results of this multi-center pivotal clinical trial support the previous POC study results showing that a single RAP session can provide non-invasive, nearly painless improvement in the appearance of cellulite with no down time. A blinded independent dermatologist review panel will assess efficacy for all 67 patients by comparing pre/post photographs at the completion of all 12-week follow-ups.

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References:

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Evaluation of the Efficacy and Safety of Picosecond Laser for the Treatment of Melasma

Background: Melasma is a common pigmentation disorder that causes significant distress to patients. Two recently published studies reported that picosecond laser in combination with hydroquinone was superior to hydroquinone alone for the treatment of melasma.

Methods: This was a single-center; prospective, open-label study with split face, before-and-after study design. Patients received 3 treatments at 4-week intervals and returned for 1 & 3 month follow up visits. Settings for 1064nm: 10mm spot size, PD 800ps and 8ns, with average fluence of 0.81±0.03J/cm2 and 1.5 J/cm2 respectively. Melanin Index was assessed by using a mexameter device while MASI score was evaluated by Wood's lamp. Improvement was assessed by the investigator and patient using the 5-point clearance scale. Patient's discomfort was rated by using the visual analog scale (VAS), downtime and satisfaction were also recorded. Safety was monitored throughout the study.

Results: Twenty patients were enrolled and 17 appeared at 3-month follow up visit, average age was 45, Fitzpatrick ST II-V with mild to moderate severity melasma. MASI score improved throughout the course of the study, and overall improvement in skin appearance was noted at 50% and 67% of patients at 1 and 3-months follow- up visits, respectively. The Melanin Index scores kept improving throughout the follow-up visits. All patients reported minimal downtime showing only a trace of erythema immediately following treatment. The average pain score was 1.60±1.45 and post-treatment downtime was not observed. No serious adverse events occurred.

Conclusion: Using 1064nm was found to be safe and effective for melasma treatment.

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References:

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Plumbagin Potentiates Vemurafenib's effects in the treatment of BRAF-mutant melanoma

Background: Vemurafenib is a targeted agent that has revolutionized the treatment of melanoma carrying BRAFV600E mutation. However, resistant develops in most patients. Studies have shown that the activation of the PI3K pathway to be a mechanism of resistance. Plumbagin, a phytochemical, has anti-tumorigenic activity through its inhibition of the PI3K.

Design/Method: -In vitro study of BRAF-mutant human melanoma cells (A375, SK-MEL-28, and RPMI-7951) treated with combination therapy (plumbagin and vemurafenib) vs single agents (plumbagin or vemurafenib) using a clonogenic assay.

-In vivo study of the effect of combination therapy vs single agents on tumor size using athymic nude mice subcutaneously implanted with A375 melanoma cells. Tumor sections were stained via immunohistochemistry for cell proliferation and PI3K pathway markers.

Results: Plumbagin and vemurafenib in combination reduced cell growth and colony formation more effectively than single agents and resulted in increased apoptosis and decreased proliferation:
a. Increased the cleavage of caspase-3 and PARP
b. Decreased protein expression of Bcl2 and Mcl-1
c. Increased protein expression of Bax and Bak

In athymic nude mice combination treatment resulted in greater inhibition of tumor growth. Furthermore, combination

treatment reduced proliferation and inhibited MAPK and PI3K signaling pathways in A375 tumor sections to a greater extent than single agents:
a. Decreased phosphorylation of MEK1/2 ERK1/2, AKT, mTOR
b. Decreased protein expression of PI3K
c. Decreased PCNA and Ki67

Conclusion: Plumbagin enhances the anti-tumorigenic activities of vemurafenib. Thus, plumbagin may show potential as a therapeutic agent; establishing the need for further advanced in vivo and clinical studies.

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DirkJan Hijnen; Eli Lilly and Company - Advisory Board (Honoraria); Incyte Corporation - Advisory Board (Honoraria); Leo Pharma A/S - Advisory Board (Honoraria), Speaker/Faculty Education (Honoraria); L'Oréal France - Speaker (Honoraria); Pfizer Inc. - Advisory Board (Honoraria); Sanofi Genzyme - Advisory Board (Honoraria), Speaker/Faculty Education (Honoraria)

Dom Vitarella, PhD; Revance Therapeutics, Inc. - Employee (Salary), Employee (Stock), Employee (Stock Options)

Dong Hee Kim; No financial relationships exist with commercial interests.

Dorgham Nevine, MD; No financial relationships exist with commercial interests.

Dulce M. Barrios, MS; No financial relationships exist with commercial interests.

Dylan Haynes, MCR; No financial relationships exist with commercial interests.

Dylan Hennessey; No financial relationships exist with commercial interests.

E

Elaine C. Siegfried; No financial relationships exist with commercial interests.

Elizabeth A. Quigley, MD; Merck & Co., Inc - Employee (Salary); UpToDate, Inc - Other (Honoraria);

Elizabeth Tanzi, MD; Beiersdorf, Inc. - Speaker (Honoraria); Merz Aesthetics - Consultant (Other Financial Benefit); Neutrogena Corporation - Independent Contractor (Fees); Sciton Inc. - Investigator (Other Financial Benefit); Soliton - Advisory Board (Fees); Solta Medical - Investigator (Other Financial Benefit); Ulthera - Speaker (Honoraria); Zalea, LLC - Advisory Board (Fees); Zeltiq Aesthetics - Advisory Board (Fees);

Emma Guttman-Yassky; AbbVie - Consultant (Honoraria), Investigator (Grants/Research Funding); Almirall - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Amgen - Consultant (Honoraria), Investigator (Grants/Research Funding); AnaptysBio - Investigator (Grants/Research Funding); Asana Biosciences, LLC - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Boehringer Ingelheim - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Cara Therapeutics - Advisory Board (Honoraria), Consultant (Honoraria); Celgene Corporation - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Concert Pharmaceuticals - Consultant (Honoraria), Investigator (Grants/Research Funding); DBV Technologies - Advisory Board (Honoraria), Consultant (Honoraria); Dermavant Sciences - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Dermira - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); DS Biopharma - Consultant (Honoraria), Investigator (Grants/Research Funding); Eli Lilly and Company - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); EMD Serono - Consultant (Honoraria); Escalier - Advisory Board (Honoraria), Consultant (Honoraria); FLX Bio - Consultant (Honoraria); Galderma Research & Development, LLC - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Glenmark Generics Inc. - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Incyte Corporation - Advisory Board (Honoraria); Innovaderm Research Inc. - Investigator (Grants/Research Funding); Janssen Pharmaceuticals, Inc - Investigator (Grants/Research Funding); Kiniksa Pharmaceuticals, Ltd. - Investigator (Grants/Research Funding); Kyowa Hakko Kirin Pharma, Inc. - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Leo Pharma Inc - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Mitsibushi Pharma - Consultant (Honoraria); Novan - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Novartis - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Pfizer Inc. - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Ralexar Therapeutics, Inc - Investigator (Grants/Research Funding); Regeneron - Advisory Board (Honoraria), Consultant (Honoraria); Regeneron Pharmaceuticals, Inc. - Investigator (Grants/Research Funding); Sanofi - Advisory Board (Honoraria), Consultant (Honoraria); Sienna Biopharmaceuticals - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); UCB - Investigator (Grants/Research Funding); Union Therapeutics - Consultant (Honoraria), Investigator (Grants/Research Funding)

Eneida Carreiro; No financial relationships exist with commercial interests.

Enzo Berardesca, MD; No financial relationships exist with commercial interests.

Eric L Simpson, MD, MCR; AbbVie - Consultant (Fees), Investigator (Grants/Research Funding); Boehringer Ingelheim - Consultant (Fees); Demira -

Consultant (Fees); Dermavant Sciences - Consultant (Fees); Eli Lilly and Company - Consultant (Fees), Investigator (Grants/Research Funding); Forte Biosciences - Consultant (Fees); Galderma Laboratories, LP - Investigator (Grants/Research Funding); Incyte Corporation - Consultant (Fees); Kyowa Hakko Kirin Pharma, Inc. - Investigator (Grants/Research Funding); Leo Pharma Inc. - Consultant (Fees), Investigator (Grants/Research Funding); Menlo Therapeutics Inc. - Consultant (Fees); Merck - Investigator (Grants/Research Funding); Pfizer Inc. - Consultant (Fees), Investigator (Grants/Research Funding); Pierre Fabre Dermo Cosmetique France - Consultant (Fees); Regeneron - Consultant (Fees), Investigator (Grants/Research Funding); Sanofi Genzyme - Consultant (Fees); Valeant Pharmaceuticals International - Consultant (Fees);

Erin Boh, MD, PhD; AbbVie - Investigator (Grants/Research Funding), Speaker (Honoraria); Actelion - Investigator (Grants/Research Funding); Celgene - Investigator (Grants/Research Funding); Centocor Ortho Biotech Inc. - Investigator (Grants/Research Funding); Dermavant Sciences - Investigator (Grants/Research Funding); Elorac, Inc. - Investigator (Grants/Research Funding); Incyte Corporation - Investigator (Grants/Research Funding); Janssen-Ortho Inc. - Investigator (Grants/Research Funding), Speaker (Honoraria); Lilly ICOS LLC - Advisory Board (Honoraria); National Psoriasis Foundation - Advisory Board (No Compensation Received); Novartis - Speaker (Honoraria); Novartis Pharmaceuticals Corp. - Investigator (Grants/Research Funding), Speaker (Honoraria); Ortho Dermatologics - Speaker (Honoraria); Pfizer Inc. - Investigator (Grants/Research Funding); Regeneron - Speaker/Faculty Education (Honoraria); Sanofi - Speaker/Faculty Education (Honoraria); Soligenix, Inc - Investigator (Grants/Research Funding); Sun Pharmaceutical Industries Ltd. - Speaker (Honoraria); UCB - Speaker (Honoraria);

Erin Zaleski; No financial relationships exist with commercial interests.

Ernesto Muñoz-Elías, PhD; No financial relationships exist with commercial interests.

Esteban Fortuny; No financial relationships exist with commercial interests.

Etienne Saint-Cyr Proulx; No financial relationships exist with commercial interests.

F

Fabio Borges; No financial relationships exist with commercial interests.

Farrukh Afaq, PhD; No financial relationships exist with commercial interests.

Frank Kirchner; No financial relationships exist with commercial interests.

Frans Maruma, MD; No financial relationships exist with commercial interests.

Frédéric Caux; AbbVie - Advisory Board (Honoraria); LEO Laboratories Ltd (LEO Pharma) - Investigator (Fees), Speaker (Honoraria); Novartis - Advisory Board (Honoraria); Pierre Fabre Dermatologie - Consultant (Honoraria); Principia Biopharma Inc - Advisory Board (Honoraria), Investigator (Fees); Roche Laboratories - Investigator (Fees);

Frederique Menzaghi, PhD; No financial relationships exist with commercial interests.

Fumihiro Takahashi; No financial relationships exist with commercial interests.

G

Gary Chan; Pfizer Inc. - Employee (Salary)

Gil Yosipovitch, MD; Galderma Laboratories, L.P. - Consultant (Honoraria); Kiniksa Pharmaceuticals, Ltd. - Investigator (Grants/Research Funding); Menlo Therapeutics - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Novartis - Consultant (Honoraria); Pfizer Inc. - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Sanofi/Regeneron - Advisory Board (Honoraria); Sienna Biopharmaceuticals - Advisory Board (Honoraria); Sun Pharmaceutical Industries Ltd. - Investigator (Grants/Research Funding); Trevi Therapeutics - Advisory Board (Honoraria)

Ginny Braman; Concert Pharmaceuticals - Employee (Salary)

Gregory S. Phillips, BS; No financial relationships exist with commercial interests.

H

Helen C. Haliasos, MD; No financial relationships exist with commercial interests.

Herbert L Bonkovsky; No financial relationships exist **with commercial interests.**

Heribert W. Staudinger; Sanofi Genzyme - Employee (Salary)

Hernan Valdez; Pfizer Inc. - Employee (Salary), Stockholder (Stock)

Hidehisa Saeki; No financial relationships exist with commercial interests.

Hiroo Yokozeki, MD, PhD; No financial relationships exist with commercial interests.

Ho Seok Suh; No financial relationships exist with commercial interests.

Hongyao Du, MD, PhD; No financial relationships exist with commercial interests.

Howard Welgus; No financial relationships exist with commercial interests.

Hubert Reich; Dr. August Wolff GmbH& Co. - Employee (Salary)

J

Jacob Beer B; No financial relationships exist with commercial interests.

Jacob P. Thyssen; No financial relationships exist with commercial interests.

Jade Meyers; No financial relationships exist with commercial interests.

James Cassella, PhD; Concert Pharmaceuticals - Employee (Salary), Employee (Stock), Employee (Stock Options)

James Krueger; AbbVie - Consultant (Honoraria); Akros Pharma, Inc. - Investigator (Grants/Research Funding); Allergan, Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding); Almirall - Consultant (Honoraria); Amgen - Consultant (Honoraria), Investigator (Grants/Research Funding); Arena Pharmaceuticals - Consultant (Honoraria); Aristea Therapeutics - Consultant (Honoraria); Asana Biosciences, LLC - Consultant (Honoraria); Aurigene Discovery Technologies, Inc. - Consultant (Honoraria); Avillion - Investigator (Grants/Research Funding); Biogen - Consultant (Honoraria), Investigator (Grants/Research Funding); Boehringer Ingelheim - Consultant (Honoraria), Investigator (Grants/Research Funding); Botanix Pharmaceuticals - Investigator (Grants/Research Funding); Bristol-Myers Squibb - Consultant (Honoraria), Investigator (Grants/Research Funding); Celgene - Consultant (Honoraria), Investigator (Grants/Research Funding); Eli Lilly and Company - Consultant (Honoraria), Investigator (Grants/Research Funding); Escalier - Consultant (Honoraria); Exicure - Investigator (Grants/Research Funding); Incyte Corporation - Investigator (Grants/Research Funding); Innovaderm Research Inc. - Investigator (Grants/Research Funding); Janssen Pharmaceuticals, Inc - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Leo Pharma Inc - Investigator (Grants/Research Funding); Leo Pharma Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding); Menlo Therapeutics - Consultant (Honoraria); Nimbus Therapeutics - Consultant (Honoraria); Novan - Investigator (Grants/Research Funding); Novartis - Investigator (Grants/Research Funding); Novartis Pharmaceuticals Corp. - Consultant (Honoraria); Parexel - Investigator (Grants/Research Funding); Pfizer Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding); Regeneron - Investigator (Grants/Research Funding); Sanofi US Services - Consultant (Honoraria); Sienna Biopharmaceuticals - Consultant (Honoraria), Investigator (Grants/Research Funding); Sun Pharmaceutical Industries Ltd. - Consultant (Honoraria); UCB - Consultant (Honoraria), Investigator (Grants/Research Funding); Valeant Pharmaceuticals North America LLC - Consultant (Honoraria); Vitae Pharmaceuticals - Investigator (Grants/Research Funding)

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Jana van Hehn, PhD; No financial relationships exist with commercial interests.

Janice Drew; Dermira - Employee (Salary), Employee (Stock Options)

Janice Hu, BS; No financial relationships exist with commercial interests.

Jason Newman, MD; Boulder Surgical - Advisory Board (Honoraria); Castle Biosciences, Inc - Advisory Board (Honoraria); Medtronic - Consultant (Honoraria)

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Jeremy B. Green, MD; No financial relationships exist with commercial interests.

Jiajia Lan; No financial relationships exist with commercial interests.

Jinjin Zhu; No financial relationships exist with commercial interests.

Jintao Zhu; No financial relationships exist with commercial interests.

Johannes S. Kern; No financial relationships exist with commercial interests.

John Browning; No financial relationships exist with commercial interests.

John S. Barbieri, MD MBA; No financial relationships exist with commercial interests.

Jon Cogan; No financial relationships exist with commercial interests.

Jonathan I. Silverberg, MD, PhD, MPH; AbbVie - Consultant (Honoraria), Investigator (No Compensation Received); AnaptysBio - Consultant (Honoraria); Arena Pharmaceuticals - Consultant (Fees); Asana Biosciences, LLC - Consultant (Honoraria); Celgene - Advisory Board (Fees); Dermavant Sciences - Consultant (Fees); Dermira - Advisory Board (Honoraria); Eli Lilly and Company - Consultant (Honoraria), Investigator (No Compensation Received); Galderma Research & Development, LLC - Consultant (Honoraria); GlaxoSmithKline - Consultant (Honoraria), Investigator (No Compensation Received); Glenmark Generics Inc. - Consultant (Honoraria); Kiniksa Pharmaceuticals, Ltd. - Consultant (Honoraria), Investigator (No Compensation Received); Leo Pharma Inc - Advisory Board (Honoraria); Leo Pharma Inc. - Investigator (Honoraria); Medimmune - Consultant (Honoraria); Menlo Therapeutics - Advisory Board (Honoraria), Investigator (No Compensation Received); Pfizer Inc. - Advisory Board (Honoraria), Consultant (Honoraria); Regeneron - Consultant (Honoraria), Investigator (No Compensation Received), Speaker (Honoraria); Sanofi - Consultant (Grants/Research Funding)

Joseph F. Merola, MD, MMSc; No financial relationships exist with commercial interests.

Josh S. Bryer, BA; No financial relationships exist with commercial interests.

Juan Tao; No financial relationships exist with commercial interests.

K

Karl E Anderson; No financial relationships exist with commercial interests.

Katarina Kesty, MD, MBA; No financial relationships exist with commercial interests.

Katherine Brag, MD; Janssen Pharmaceuticals, Inc - Other (Grants/Research Funding);

Kenneth Gordon, MD; AbbVie - Consultant (Honoraria), Investigator (Grants/Research Funding); Almirall - Consultant (Honoraria); Amgen - Consultant (Honoraria), Investigator (Grants/Research Funding); Boehringer Ingelheim - Consultant (Honoraria), Investigator (Grants/Research Funding); Bristol-Myers Squibb - Consultant (Honoraria); Celgene Corporation - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Demira - Consultant (Honoraria); Dermavant Sciences - Consultant (Honoraria); Eli Lilly and Company - Investigator (Grants/Research Funding); Janssen Pharmaceuticals, Inc - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Kyowa Hakko Kirin Pharma, Inc. - Consultant (Honoraria); Leo Pharma Inc - Consultant (Honoraria); Lilly ICOS LLC - Advisory Board (Honoraria); Novartis - Investigator (Grants/Research Funding); Novartis Pharmaceuticals Corp. - Advisory Board (Honoraria); Othro Dermatologics - Consultant (Honoraria); Pfizer Inc. - Advisory Board (Honoraria); Sun Pharmaceutical Industries Ltd. - Consultant (Honoraria); UCB - Consultant (Honoraria);

Kim A. Papp; AbbVie - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); Akros Pharma, Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria); Amgen - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); Anacor Pharmaceuticals, Inc. - Investigator (Grants/Research Funding), Other (Grants/Research Funding); Arcutis, Inc. - Consultant (Grants/Research Funding), Investigator (Grants/Research Funding); Astellas Pharma Canada, Inc. - Advisory Board (Grants/Research Funding), Consultant (Grants/Research Funding), Investigator (Grants/Research Funding), Speaker (Grants/Research Funding); Bausch Health - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); Baxalta Incorporated - Consultant (Grants/Research Funding); Boehringer Ingelheim - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria); Bristol-Myers Squibb - Advisory Board (Grants/Research Funding), Consultant (Grants/Research Funding); Can-Fite BioPharma, Ltd. - Consultant (Grants/Research Funding), Investigator (Grants/Research Funding); Celgene Corporation - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); Coherus Biosciences - Consultant (Honoraria), Investigator (Grants/Research Funding); Dermira - Consultant (Grants/Research Funding), Investigator (Grants/Research Funding); Dow Pharmaceutical Sciences, Inc. - Consultant (Grants/Research Funding), Investigator (Grants/Research Funding); Eli Lilly and Company - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); Galderma Canada, Inc - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Genentech, Inc. - Consultant (Grants/Research Funding), Investigator (Grants/Research Funding); Gilead Sciences - Investigator (Grants/Research Funding); GlaxoSmithKline - Investigator (Grants/Research Funding); InflaRx - Investigator (Grants/Research Funding); Janssen Pharmaceuticals, Inc - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); Kyowa Hakko Kirin Pharma, Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); Leo Pharma Inc - Consultant (Grants/Research Funding), Investigator (Grants/Research Funding), Speaker (Grants/Research Funding); Medimmune - Investigator (Grants/Research Funding); Meiji Seika Pharma Co., Ltd - Consultant (No Compensation Received); Merck - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); Merck Serono - Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria); Mitsibushi Pharma - Consultant (Honoraria); Moberg Pharma North America LLC - Investigator (Grants/Research Funding); Novartis - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); Pfizer Inc. - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); PRCL Research - Consultant (Honoraria), Investigator (Grants/Research Funding); Regeneron - Advisory Board (Grants/Research Funding), Consultant (Grants/Research Funding), Investigator (Grants/Research Funding), Other (Grants/Research Funding); Roche Laboratories - Consultant (Grants/Research Funding), Investigator (Grants/Research Funding); Sanofi - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Other (Honoraria), Speaker (Honoraria); Sun Pharmaceutical Industries Ltd. - Advisory Board (Grants/Research Funding), Investigator (Grants/Research Funding); Takeda Pharmaceuticals USA Inc - Consultant (Honoraria), Investigator (Grants/Research Funding); UCB - Advisory Board

(Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding)

Kimberly Capone, PhD; No financial relationships exist with commercial interests.

Kirstine J Belongie; Mitsubishi Tanabe Pharma Development America - Consultant (Salary);

Kristian Reich, MD, PhD; AbbVie - Advisory Board (Honoraria), Other (Honoraria), Speaker (Honoraria); Affibody - Advisory Board (Honoraria); Almirall - Advisory Board (Honoraria); Amgen - Advisory Board (Honoraria); Biogen - Advisory Board (Honoraria), Speaker (Honoraria); Boehringer Ingelheim - Advisory Board (Honoraria); Celgene - Advisory Board (Honoraria); Celgene Corporation - Speaker (Honoraria); Centocor Ortho Biotech Inc. - Advisory Board (Honoraria); Covegan - Speaker (Honoraria); Eli Lilly and Company - Speaker (Honoraria); Forward Pharma - Consultant (Honoraria); Fresenius Medical Care - Advisory Board (Honoraria); GlaxoSmithKline - Speaker (Honoraria); Janssen-Cilag - Speaker (Honoraria); Kyowa Hakko Kirin Pharma, Inc. - Advisory Board (Honoraria); Leo Pharma A/S - Speaker (Honoraria); Lilly ICOS LLC - Advisory Board (Honoraria); Medac Pharma, Inc - Speaker (Honoraria); Merck & Co., Inc. - Speaker (Honoraria); Miltenyi Biotec Inc. - Advisory Board (Honoraria); Novartis Pharmaceuticals Corp. - Advisory Board (Honoraria); Pfizer Inc. - Data Safety Monitoring Board (Honoraria); Regeneron - Advisory Board (Honoraria); Samsung - Advisory Board (Honoraria); Sanofi - Advisory Board (Honoraria); Takeda Pharmaceuticals USA Inc - Advisory Board (Honoraria); UCB - Advisory Board (Honoraria); Valeant Pharmaceuticals International - Advisory Board (Honoraria); Xenoport, Inc. - Advisory Board (Honoraria);

Külli Kingo; No financial relationships exist with commercial interests.

Kyle Covington, PhD; Castle Biosciences, Inc - Employee (Salary)

L

Lawrence Eichenfield; No financial relationships exist with commercial interests.

Lawrence Sher; Glenmark Pharmaceuticals, Inc. - Investigator (Grants/Research Funding); Pfizer Inc. - Investigator (Grants/Research Funding); Regeneron - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Sanofi Genzyme - Advisory Board (Honoraria), Investigator (Grants/Research Funding)

Leon H. Kircik; 3M Pharmaceuticals - Investigator (Grants/Research Funding), Speaker (Honoraria); Abbott Laboratories - Speaker (Honoraria); Ablynx - Investigator (Grants/Research Funding); Acambis - Investigator (Grants/Research Funding); Allergan, Inc - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Honoraria), Speaker (Honoraria); Almirall - Consultant (Honoraria); Amgen - Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); AnaptysBio - Investigator (Grants/Research Funding); Aqua - Advisory Board (Honoraria); Arcutis, Inc. - Investigator (Grants/Research Funding); Astellas Pharma US, Inc - Investigator (Grants/Research Funding), Speaker (Honoraria); Asubio Pharmaceuticals, Inc. - Investigator (Grants/Research Funding); Bayer Consumer Healthcare Pharmaceuticals - Investigator (Grants/Research Funding); Beiersdorf, Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding); Biogen - Advisory Board (Honoraria); Biolife - Investigator (Grants/Research Funding); Biopelle, Inc. - Investigator (Grants/Research Funding); Boehringer Ingelheim - Investigator (Grants/Research Funding); Botanix Pharmaceuticals - Consultant (Honoraria); Breckinridge Pharma - Investigator (Grants/Research Funding); Bristol-Myers Squibb - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Cassiopea SpA - Consultant (Honoraria); Celgene - Consultant (Honoraria), Investigator (Grants/Research Funding); Cellceutix - Investigator (Grants/Research Funding); Centocor Ortho Biotech Inc. - Investigator (Grants/Research Funding); ChemoCentryx - Investigator (Grants/Research Funding); ColBar LifeScience Ltd. - Advisory Board (Honoraria), Consultant (Honoraria); CollaGenex Pharmaceuticals, Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Connetics Corporation - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Coria Laboratories - Investigator (Grants/Research Funding); Dermavant Sciences, Inc. - Investigator (Grants/Research Funding); Dermik Laboratories, a business of sanofi-aventis U.S. LLC - Speaker (Honoraria); Dow Pharmaceutical Sciences, Inc. - Investigator (Grants/Research Funding); DUSA Pharmaceuticals, Inc. - Investigator (Grants/Research Funding); Embil Pharmaceuticals, Co., Ltd - Speaker (Honoraria); EOS - Advisory Board (Honoraria); Ferndale Laboratories, Inc. - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Galderma Laboratories, L.P. - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Genentech, Inc. - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); GlaxoSmithKline - Investigator (Grants/Research Funding); Healthpoint - Investigator (Grants/Research Funding); Incyte Corporation - Investigator (Grants/Research Funding); Intendis, Inc. - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Isdin - Advisory Board (Honoraria); Johnson & Johnson Consumer Products Company - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria), Stockholder (Stock); Laboratory Skin Care, Inc. -

Consultant (Honoraria); Leo Pharma Inc - Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); MC2 Therapeutics - Consultant (Honoraria); Medical International Technologies - Consultant (Honoraria); Medicis Pharmaceutical Corporation - Investigator (Grants/Research Funding); Merck & Co., Inc - Consultant (Honoraria); Merck Serono - Speaker (Honoraria); Merz Pharmaceuticals, LLC - Consultant (Honoraria); NanoBio Corporation - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Novartis Pharmaceuticals Corp. - Consultant (Honoraria), Investigator (Grants/Research Funding); Nucryst - Investigator (Grants/Research Funding); Obagi Medical Products - Investigator (Grants/Research Funding); Onset Dermatologics - Investigator (Grants/Research Funding), Speaker (Honoraria); Othro Dermatologics - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Pfizer Inc. - Investigator (Grants/Research Funding); Pharmaderm - Investigator (Grants/Research Funding), Speaker (Honoraria); Promius Pharma, LLC - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); PuraCap Pharmaceutical - Consultant (Honoraria); QLT Inc. - Investigator (Honoraria); Sandoz, a Novartis company - Investigator (Grants/Research Funding); SkinMedica, Inc. - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Stiefel a GSK company - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Sun Pharmaceutical Industries Ltd. - Advisory Board (Honoraria), Speaker (Honoraria); Taro Pharm - Consultant (Honoraria), Investigator (Grants/Research Funding); TolerRx - Investigator (Grants/Research Funding); Triax Pharmaceuticals, LLC - Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Valeant Pharmaceuticals International - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Warner Chilcott - Advisory Board (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Xenoport, Inc. - Investigator (Grants/Research Funding); Zalicus - Investigator (Grants/Research Funding)

Leonardo Celleno; No financial relationships exist with commercial interests.

Leora Aizman, BS; No financial relationships exist with commercial interests.

Lianbin Zhang; No financial relationships exist with commercial interests.

Linda Stein Gold; AbbVie - Advisory Board (Honoraria); Actavis - Speaker (Honoraria); Allergan, Inc. - Investigator (Grants/Research Funding); Aqua - Advisory Board (Honoraria); Botanix Pharmaceuticals - Consultant (Honoraria); Dermavant Sciences - Advisory Board (Honoraria); Dermira - Speaker (Honoraria); Foamix - Advisory Board (Honoraria); Galderma Laboratories, L.P. - Advisory Board (Honoraria), Investigator (Grants/Research Funding); La Roche-Posay Laboratorie Pharmaceutique - Advisory Board (Honoraria); Leo Pharma Inc. - Investigator (Grants/Research Funding); LEO Pharma, US - Advisory Board (Honoraria); Lilly ICOS LLC - Advisory Board (Honoraria); Merz Pharmaceuticals, LLC - Advisory Board (Honoraria); Novartis Pharmaceuticals Corp. - Investigator (Grants/Research Funding); Pfizer Inc. - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Promius Pharmaceuticals - Advisory Board (Honoraria); Roche Laboratories - Independent Contractor (Fees), Other (Honoraria); Sol-Gel Technologies - Consultant (Grants/Research Funding); Taro Pharm - Advisory Board (Honoraria), Consultant (Honoraria); Topica - Investigator (Grants/Research Funding); Valeant Pharmaceuticals International - Advisory Board (Honoraria), Investigator (Grants/Research Funding)

LindaAnn Wraith; Novartis Pharmaceuticals Corp. - Employee (Salary)

Lisa A. Beck; AbbVie - Consultant (Fees), Investigator (Grants/Research Funding); Allakos - Consultant (Fees); Arena Pharmaceuticals - Consultant (Honoraria); AstraZeneca - Consultant (Fees); Celgene Corporation - Consultant (Fees); Connect Biopharma LLC - Consultant (Honoraria); Eli Lilly and Company - Consultant (Fees); LEO Laboratories Ltd (LEO Pharma) - Consultant (Fees); LEO Pharma, US - Investigator (Grants/Research Funding); Medtronics - Stockholder (Stock); Novartis - Consultant (Fees); Pfizer Inc. - Consultant (Fees), Investigator (Grants/Research Funding); RAPT Therapeutics - Consultant (Honoraria); Realm Therapeutics - Investigator (Grants/Research Funding); Regeneron - Consultant (Fees); Regeneron Pharmaceuticals, Inc. - Investigator (Grants/Research Funding); Sanofi - Consultant (Fees), Investigator (Grants/Research Funding); UCB - Consultant (Fees); Vimalan Biosciences, Inc. - Consultant (Fees)

Lourdes Perez-Chada, MD, MMSc; No financial relationships exist with commercial interests.

Luke Peterson; UCB - Employee (Salary), Stockholder (Stock)

M

Manisha Balwani; No financial relationships exist with commercial interests.

Manmath Patekar; Novartis - Employee (Salary);

Marco DiBonaventura; Pfizer Inc. - Employee (Salary), Employee (Stock Options)

Marco Piacentini; No financial relationships exist with commercial interests.

Margitta Worm; No financial relationships exist with commercial interests.

Mario E. Lacouture, MD; Amgen - Consultant (Fees); Apricity - Advisory Board (Fees); Astellas Pharma US,

Inc - Consultant (Honoraria); Asymmetric Therapeutics, LLC - Consultant (Fees); Azitra, Inc - Consultant (Fees); Celldex - Consultant (Honoraria); Deciphera Pharmaceuticals, Inc. - Consultant (Fees); Galderma Research & Development, LLC - Consultant (Honoraria); Harborside - Other (Fees); Helsinn Healthcare - Consultant (Honoraria); Janssen Pharmaceuticals, Inc - Consultant (Fees); Johnson and Johnson - Consultant (Honoraria), Investigator (Grants/Research Funding); Kyowa Hakko Kirin Pharma, Inc. - Consultant (Fees); Legacy - Consultant (Fees); Loxo Oncology, Inc. - Consultant (Fees); Lutris - Consultant (Fees), Investigator (Grants/Research Funding); Menlo Therapeutics - Consultant (Honoraria); Merck & Co., Inc - Consultant (Honoraria); NanOlogy - Consultant (Fees); National Community Oncology Dispensing Association - Consultant (Fees); Novartis - Consultant (Honoraria); Novocure - Consultant (Honoraria); OnQuality Pharmaceuticals, Ltd. - Consultant (Fees); QED Therapeutics - Consultant (Fees); Seattle Genetics - Consultant (Fees); Takeda Pharmaceuticals USA Inc - Consultant (Fees); US Biotest, Inc - Investigator (Grants/Research Funding); Veloce BioPharma LLC - Investigator (Grants/Research Funding); Wiley & Sons, Inc. - Other (Fees);

Mark Amster; Abbott Pharmaceuticals - Investigator (Grants/Research Funding); Allergan, Inc - Investigator (Grants/Research Funding); Bayer HealthCare - Investigator (Grants/Research Funding); BioPharmX - Investigator (Grants/Research Funding); Boehringer Ingelheim - Investigator (Grants/Research Funding); Botanix Pharmaceuticals - Investigator (Grants/Research Funding); CU-Tech - Investigator (Grants/Research Funding); Demira - Investigator (Grants/Research Funding); Foamix Pharmaceuticals Ltd - Investigator (Grants/Research Funding); Incyte Corporation - Investigator (Grants/Research Funding); Kadmon Corporation, LLC - Investigator (Grants/Research Funding); Leo Pharma Inc - Investigator (Grants/Research Funding); Menlo Therapeutics - Investigator (Grants/Research Funding); Mitsibushi Pharma - Investigator (Grants/Research Funding); Novartis - Investigator (Grants/Research Funding); Valeant Pharmaceuticals North America LLC - Investigator (Grants/Research Funding); Vanda Pharmaceuticals Inc. - Investigator (Grants/Research Funding)

Mark Boguniewicz; AbbVie - Advisory Board (Honoraria); Demira - Advisory Board (Honoraria); Lilly ICOS LLC - Advisory Board (Honoraria); Regeneron - Consultant (Honoraria), Investigator (Grants/Research Funding); Sanofi Genzyme - Consultant (Honoraria);

Mark Lebwohl, MD; AbbVie - Investigator (Grants/Research Funding); Aditum Bio - Consultant (Honoraria); Allergan, Inc. - Consultant (Honoraria); Almirall - Consultant (Honoraria); Amgen - Investigator (Grants/Research Funding); Arcutis, Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding); Avotres, Inc. - Consultant (Honoraria); BirchBioMed - Consultant (Honoraria); BMD Skincare, Inc. - Consultant (Honoraria); Boehringer Ingelheim - Consultant (Honoraria), Investigator (Grants/Research Funding); Bristol-Myers Squibb - Consultant (Honoraria); Cara Therapeutics - Consultant (Honoraria); Castle Biosciences, Inc - Consultant (Honoraria); Corrona, Inc. - Other (Honoraria); Dermavant Sciences - Consultant (Honoraria); Dr. Reddy - Consultant (Honoraria); Eli Lilly and Company - Investigator (Grants/Research Funding); EMD Serono - Consultant (Honoraria); Evelo Biosciences, Inc. - Consultant (Honoraria); Facilitation of International Dermatology Education - Consultant (Honoraria); Foundation for Research & Education of Dermatology - Other (Honoraria); Incyte Corporation - Investigator (Grants/Research Funding); Inozyme Pharma - Consultant (Honoraria); Janssen Research & Development, LLC - Investigator (Grants/Research Funding); Leo Pharma Inc - Consultant (Honoraria); LEO Pharma, US - Investigator (Grants/Research Funding); Meiji Seika Pharma Co., Ltd - Consultant (Honoraria); Menlo Therapeutics - Consultant (Honoraria); Mitsibushi Pharma - Consultant (Honoraria); Neuroderm LTD - Consultant (Honoraria); Ortho Dermatologics - Investigator (Grants/Research Funding); Pfizer Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding); Theravance Biopharma - Consultant (Honoraria); UCB - Investigator (Grants/Research Funding); Verrica Pharmaceuticals Inc - Consultant (Honoraria);

Mathew Zirwas; AbbVie - Investigator (Grants/Research Funding); Aclaris Therapeutics Inc. - Investigator (Grants/Research Funding); Asana Biosciences, LLC - Investigator (Grants/Research Funding); Aseptic MD - Stockholder (Stock); ChemoCentryx - Investigator (Grants/Research Funding); DS Laboratories - Investigator (Grants/Research Funding); Foamix - Investigator (Grants/Research Funding); Genentech, Inc. - Consultant (Honoraria); Incyte Corporation - Investigator (Grants/Research Funding); Janssen Pharmaceuticals, Inc - Investigator (Grants/Research Funding); LEO Pharma, US - Investigator (Grants/Research Funding); Lilly ICOS LLC - Investigator (Grants/Research Funding); L'Oreal USA Inc. - Consultant (Honoraria); Menlo Therapeutics - Consultant (Honoraria), Investigator (Grants/Research Funding); Ortho Dermatologics - Consultant (Honoraria); Pfizer Inc. - Investigator (Grants/Research Funding); Regeneron - Speaker (Honoraria); Sanofi - Speaker (Honoraria); UCB - Investigator (Grants/Research Funding)

Maudeline Louis; No financial relationships exist with commercial interests.

Maureen Kelly, MD; No financial relationships exist with commercial interests.

Mei Chen, PhD; No financial relationships exist with commercial interests.

Melinda Gooderham; AbbVie - Advisory Board (Honoraria), Investigator (Grants/Research Funding),

Speaker (Honoraria); Akros Pharma, Inc. - Investigator (Grants/Research Funding); Amgen - Investigator (Grants/Research Funding), Speaker (Honoraria); Arcutis, Inc. - Investigator (Grants/Research Funding); Bausch Health - Consultant (Honoraria), Investigator (Grants/Research Funding); Boehringer Ingelheim - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Bristol-Myers Squibb - Consultant (Honoraria), Investigator (Grants/Research Funding); Celgene Corporation - Investigator (Grants/Research Funding), Speaker (Honoraria); Dermira - Investigator (Grants/Research Funding); Eli Lilly and Company - Investigator (Grants/Research Funding), Speaker/Faculty Education (Honoraria); Galderma Laboratories, LP - Investigator (Grants/Research Funding), Speaker (Honoraria); Janssen Pharmaceuticals, Inc - Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Kyowa Hakko Kirin Pharma, Inc. - Investigator (Grants/Research Funding); Leo Pharma Inc - Investigator (Grants/Research Funding); Leo Pharma Inc. - Speaker (Honoraria); Medimmune - Investigator (Grants/Research Funding); Merck & Co., Inc. - Investigator (Grants/Research Funding); Novartis Pharmaceuticals Corp. - Consultant (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Pfizer Inc. - Investigator (Grants/Research Funding), Speaker (Honoraria); Regeneron - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Roche Laboratories - Investigator (Grants/Research Funding); Sanofi Genzyme - Consultant (Honoraria), Speaker (Honoraria); Sanofi/Regeneron - Advisory Board (Honoraria); Sun Pharmaceutical Industries Ltd. - Advisory Board (Honoraria); UCB - Advisory Board (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria)

Michael S. Kaminer; Allergan, Inc. - Advisory Board (Honoraria); Arctic Fox - Consultant (Honoraria), Investigator (Grants/Research Funding); Endo Pharmaceuticals - Consultant (Honoraria), Investigator (Grants/Research Funding); ExploraMed - Consultant (Honoraria); Galderma USA - Investigator (Grants/Research Funding); Soliton - Consultant (Honoraria), Investigator (Grants/Research Funding); Michael Soeberdt; Dr. August Wolff GmbH& Co. - Employee (Salary)

Michael Song, MD; Johnson & Johnson Pharmaceutical Research & Development - Employee (Salary);

Michelle Hao; No financial relationships exist with commercial interests.

Michelle Meleck; No financial relationships exist with commercial interests.

Misha Rosenbach, MD; aTyr Pharma - Consultant (Honoraria); Derm101 - Independent Contractor (Honoraria); JAMA - Employee (Salary); Janssen Pharmaceuticals, Inc - Consultant (Honoraria); Merck & Co., Inc - Consultant (Honoraria); Promet Therapeutics, LLC - Investigator (Grants/Research Funding);

Mohamad Goldust, MD; No financial relationships exist with commercial interests.

Motoki Akamatsu; No financial relationships exist with commercial interests.

N

Nakhle Saba, MD; No financial relationships exist with commercial interests.

Nikolai Klebanov; No financial relationships exist with commercial interests.

Nina Magnolo, MD; AbbVie - Consultant (Fees), Investigator (Grants/Research Funding); Asana BioSciences - Investigator (Grants/Research Funding); Boehringer Ingelheim - Investigator (Grants/Research Funding); Celgene - Investigator (Grants/Research Funding); Dr Reddy's Laboratory - Investigator (Grants/Research Funding); Eli Lilly and Company - Investigator (Grants/Research Funding); Galderma USA - Investigator (Grants/Research Funding); Genentech, Inc. - Investigator (Grants/Research Funding); Incyte Corporation - Investigator (Grants/Research Funding); Janssen Pharmaceuticals, Inc - Investigator (Grants/Research Funding); Kyowa Kirin - Investigator (Grants/Research Funding); LEO Laboratories Ltd (LEO Pharma) - Consultant (Fees); Leo Pharma Inc - Investigator (Grants/Research Funding); MSD - Investigator (Grants/Research Funding); Novartis - Investigator (Grants/Research Funding); Pfizer Inc. - Investigator (Grants/Research Funding); Regeneron - Investigator (Grants/Research Funding); Sun Pharmaceutical Industries Ltd. - Investigator (Grants/Research Funding); UCB - Consultant (Fees), Investigator (Grants/Research Funding)

Norma Cameli; No financial relationships exist with commercial interests.

Nowell Solish, MD; Allergan, Inc - Advisory Board (Honoraria); Allergan, Inc. - Speaker (Honoraria); Galderma USA - Speaker (Honoraria); International hyperhidrosis society - Board of Directors (Honoraria); Revance Therapeutics, Inc. - Advisory Board (Honoraria)

O

Omer Ibrahim, MD; No financial relationships exist with commercial interests.

P

Panagiotis Stavropoulos; No financial relationships exist with commercial interests.

Pascal Joly; Almirall - Consultant (Honoraria); arGEN-X - Consultant (Honoraria); AstraZeneca - Consultant (Honoraria); GlaxoSmithKline - Consultant (Honoraria); Lilly ICOS LLC - Consultant (Honoraria); Novartis Pharmaceuticals Corp. - Consultant (Honoraria);

Principia Biopharma Inc - Consultant (Honoraria); Roche Laboratories - Consultant (Honoraria); sanofi-aventis - Consultant (Honoraria);

Patricia Meyer, PT, PhD.; No financial relationships exist with commercial interests.

Pei Liu; No financial relationships exist with commercial interests.

Peipei Zhang; No financial relationships exist with commercial interests.

Peter Foley; AbbVie - Advisory Board (Fees), Investigator (Fees); Abbvie Australia - Advisory Board (Fees), Other (Grants/Research Funding), Speaker/Faculty Education (Honoraria); Amgen - Investigator (Fees); Boehringer Ingelheim - Investigator (Fees); Bristol-Myers Squibb - Investigator (Fees); Celgene Corporation - Investigator (Fees), Other (Grants/Research Funding); Celtaxsys Inc - Investigator (Fees); CSL - Investigator (Fees); Cutanea Life Sciences - Investigator (Fees); Demira - Investigator (Fees); Eli Lilly and Company - Advisory Board (Fees), Investigator (Fees), Other (Grants/Research Funding), Speaker/Faculty Education (Honoraria); Galderma Global - Investigator (Fees); Janssen Pharmaceuticals, Inc - Advisory Board (Fees), Investigator (Fees), Other (Grants/Research Funding), Speaker/Faculty Education (Honoraria); Leo Pharma Inc - Advisory Board (Fees); Leo Pharma Inc. - Investigator (Fees); Merck - Investigator (Fees); Novartis - Advisory Board (Fees); Novartis Pharmaceuticals Corp. - Investigator (Fees), Other (Grants/Research Funding), Speaker/Faculty Education (Honoraria); Regeneron - Investigator (Fees); Sanofi Genzyme - Advisory Board (Fees), Investigator (Fees), Other (Grants/Research Funding), Speaker/Faculty Education (Fees); Sun Pharmaceutical Industries Ltd. - Advisory Board (Fees), Investigator (Fees); UCB - Advisory Board (Fees), Investigator (Fees), Other (Grants/Research Funding), Speaker/Faculty Education (Honoraria)

Pinaki Biswas; Pfizer Inc. - Employee (Salary);

Pooja Agarwal, PhD; Krystal Biotech, Inc - Employee (Salary)

Pooja Sharma, PhD; No financial relationships exist with commercial interests.

Prayashi Ghelani; No financial relationships exist with commercial interests.

Priyank Sharma, MD; No financial relationships exist with commercial interests.

R

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Rafal Mazur; No financial relationships exist with commercial interests.

Ramanan Gopalan; No financial relationships exist with commercial interests.

Ricardo Rojo; No financial relationships exist with commercial interests.

Richard Antaya, MD; Cutanea Life Sciences - Advisory Board (Honoraria); Ferndale Laboratories, Inc. - Consultant (Fees); KeyQuest Health - Consultant (Honoraria); Verrica Pharmaceuticals Inc - Advisory Board (Honoraria)

Richard B. Warren, BSc (Hons), MBChB (Hons), MRCP, PhD; No financial relationships exist with commercial interests.

Richard Langley, MD; AbbVie - Advisory Board (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Amgen - Investigator (Grants/Research Funding), Speaker (Honoraria); Astellas Pharma US, Inc - Investigator (Grants/Research Funding); Boehringer Ingelheim - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Celgene Corporation - Advisory Board (Honoraria); Centocor Ortho Biotech Inc. - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Eli Lilly and Company - Advisory Board (Honoraria), Investigator (Honoraria); Genentech, Inc. - Investigator (Grants/Research Funding); Isotechnika Pharma Inc. - Investigator (Grants/Research Funding); LEO Laboratories Ltd (LEO Pharma) - Investigator (Grants/Research Funding); Merck Serono - Investigator (Grants/Research Funding); Novartis Pharmaceuticals Corp. - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Pfizer Inc. - Investigator (Grants/Research Funding), Speaker (Honoraria); UCB - Advisory Board (Honoraria), Investigator (Grants/Research Funding)

Robert Bissonnette, MD, MSc, FRCPC; AbbVie - Investigator (Grants/Research Funding); Almirall - Consultant (Honoraria); Arcutis, Inc. - Investigator (Grants/Research Funding); Arena Pharmaceuticals - Advisory Board (Honoraria); Aristea Therapeutics - Investigator (Grants/Research Funding); Asana BioSciences - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); Bausch Health - Investigator (Grants/Research Funding); Bellus Health - Advisory Board (Honoraria); BMS - Investigator (Grants/Research Funding); Boehringer Ingelheim - Consultant (Honoraria), Investigator (Grants/Research Funding); Boston Pharmaceuticals - Consultant (Honoraria), Investigator (Grants/Research Funding); Dermavant Sciences - Investigator (Grants/Research Funding); Eli Lilly and Company - Advisory Board (Honoraria), Consultant (Honoraria), Investigator (Grants/Research Funding); EMD Serono - Consultant (Honoraria); Escalier - Investigator (Grants/Research Funding); Incyte Corporation - Investigator (Grants/Research Funding); Janssen-Ortho Inc. - Investigator (Grants/Research Funding); Kiniksa Pharmaceuticals, Ltd. - Investigator (Grants/Research Funding); Kyowa Kirin - Consultant (Honoraria); Leo Pharma Inc - Investigator (Grants/Research Funding); Novan - Investigator (Grants/Research Funding); Pfizer Inc. - Investigator (Grants/Research Funding); Ralexar Therapeutics, Inc - Investigator (Grants/Research Funding); Regeneron -

Investigator (Grants/Research Funding); Sanofi Genzyme - Advisory Board (Honoraria), Consultant (Honoraria), Speaker (Honoraria); Sienna Biopharmaceuticals - Investigator (Grants/Research Funding); UCB - Investigator (Grants/Research Funding);

Robert Cook, PhD; Castle Biosciences, Inc - Employee (Salary), Employee (Stock Options)

Robert Gniadecki; No financial relationships exist with commercial interests.

Robert J Desnick; Mitsibushi Pharma - Consultant (Fees)

Robert Spencer, PhD; Cara Therapeutics - Employee (Salary), Employee (Stock Options)

Rodney Sinclair; No financial relationships exist with commercial interests.

Rodrigo Marcel Valentim da Silva; No financial relationships exist with commercial interests.

Rolf-Markus Szeimies; Almirall - Advisory Board (Honoraria), Speaker (Honoraria); Beiersdorf, Inc. - Advisory Board (Fees); Biofrontera AG - Investigator (Fees), Speaker (Honoraria); DermoScan - Investigator (Equipment); Galapagos NV - Investigator (Fees); Galderma Laboratories, L.P. - Advisory Board (Honoraria), Investigator (Fees), Speaker (Honoraria); Janssen Pharmaceuticals, Inc - Speaker (Honoraria); Kurt Wolff GmbH & Co. KG - Advisory Board (Fees), Investigator (Fees); Leo Pharma A/S - Advisory Board (Honoraria), Investigator (Fees); photonamic GmbH & Co. KG - Investigator (Fees); Springer Publishing - Advisory Board (Honoraria)

Roman G. Rubio; No financial relationships exist with commercial interests.

Ronald Vender; Abbott Laboratories - Advisory Board (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Amgen - Advisory Board (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Celgene Corporation - Investigator (Grants/Research Funding); Cipher Pharmaceuticals - Investigator (Grants/Research Funding); Eli Lilly and Company - Advisory Board (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Galderma Laboratories, L.P. - Advisory Board (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Isotechnika Pharma Inc. - Investigator (Grants/Research Funding); Janssen-Ortho Inc. - Advisory Board (Honoraria), Investigator (Grants/Research Funding), Speaker (Honoraria); Leo Pharma Inc - Speaker (Honoraria); Leo Pharma Inc. - Advisory Board (Honoraria), Investigator (Grants/Research Funding); Merck & Co., Inc. - Advisory Board (Honoraria); Novartis - Advisory Board (Grants/Research Funding), Investigator (Grants/Research Funding), Speaker (Honoraria); Pfizer Inc. - Investigator (Grants/Research Funding); Stiefel a GSK company - Investigator (Grants/Research Funding); UCB - Investigator (Honoraria)

Ross L. Pearlman, MD; No financial relationships exist with commercial interests.

S

Sabrina R. Trelles, BA; ADC Therapeutics - Consultant (Honoraria); Adgero Biopharmaceuticals Holdings, Inc. - Consultant (Honoraria); Allergan, Inc - Consultant (Honoraria); Amgen - Consultant (Honoraria); Amryt Pharma - Consultant (Honoraria); Apricity - Consultant (Honoraria); AstraZeneca - Consultant (Honoraria); Azitra, Inc - Consultant (Honoraria); Bayer - Consultant (Honoraria); Biotest Laboratories, Inc. - Other (Grants/Research Funding); Boehringer Ingelheim - Consultant (Honoraria); Celldex - Consultant (Honoraria); Debiopharm Group - Consultant (Honoraria); Deciphrea Pharmaceuticals, Inc. - Consultant (Honoraria); Dignitana - Consultant (Honoraria); EMD Serono - Consultant (Honoraria); Galderma Research & Development, LLC - Consultant (Honoraria); Genentech, Inc. - Consultant (Honoraria); Helsinn Healthcare - Consultant (Honoraria); Janssen Pharmaceuticals, Inc - Consultant (Honoraria); Johnson and Johnson - Consultant (Honoraria); Kyowa Kirin - Advisory Board (Honoraria); Legacy - Consultant (Honoraria); Leo Pharma Inc - Consultant (Honoraria); Loxo Oncology, Inc. - Consultant (Honoraria); Lutris - Other (Grants/Research Funding); Menlo Therapeutics - Consultant (Honoraria); Merck & Co., Inc - Consultant (Honoraria); National Community Oncology Dispensing Association - Consultant (Honoraria); Novartis - Consultant (Honoraria); Novocure - Consultant (Honoraria), Other (Grants/Research Funding); OncoDerm LLC - Consultant (Honoraria); OnQuality Pharmaceuticals, Ltd. - Consultant (Honoraria); OurBrainBank - Consultant (Honoraria); Parexel - Consultant (Honoraria); Paxman - Consultant (Honoraria), Other (Grants/Research Funding); Pierre Fabre Dermatologie - Speaker (Honoraria); QED Therapeutics - Consultant (Honoraria); Roche Laboratories - Consultant (Honoraria); Seattle Genetics - Consultant (Honoraria); Takeda Pharmaceuticals USA Inc - Consultant (Honoraria); Teva - Consultant (Honoraria); Veloce BioPharma LLC - Other (Grants/Research Funding);

Sagar Munjal; No financial relationships exist with commercial interests.

Sameer Gupta; No financial relationships exist with commercial interests.

Sanda Smieszek; Vanda Pharmaceuticals Inc. - Employee (Salary)

Sandra O'Keefe; No financial relationships exist with commercial interests.

Sarah Arron, PhD; Almirall - Consultant (Salary); Castle Biosciences - Investigator (Salary); Enspectra Health - Consultant (Honoraria); Galderma USA - Investigator (Salary); Genentech, Inc. - Employee (Stock); Gerson Lehrman Group - Consultant (Honoraria); Kiniksa Pharmaceuticals, Ltd. - Investigator (Salary); Pfizer Inc. -

Investigator (Salary); Rakuten Aspyrian - Consultant (Honoraria)

Sarah J. Noor, MD; Kyowa Kirin - Advisory Board (Fees);

Sarah Kurley, PhD; Castle Biosciences, Inc - Employee (Salary), Stockholder (Stock Options)

Scott A. Elman, MD; No financial relationships exist with commercial interests.

Sharon Baum; Immune Pharmaceuticals - Investigator (Grants/Research Funding)

Shinichi Takayama; No financial relationships exist with commercial interests.

Soraya Foutouhi, MD, PhD; No financial relationships exist with commercial interests.

Stefan Beeck, MD; AbbVie - Employee (Salary), Employee (Stock)

Stella Radosta, MD; No financial relationships exist with commercial interests.

Stephan Weidinger, MD, PhD; AbbVie - Advisory Board (Honoraria), Investigator (Fees); Almirall - Investigator (Fees); Eli Lilly and Company - Advisory Board (Honoraria), Investigator (Fees); La Roche-Posay Laboratorie Pharmaceutique - Other (Grants/Research Funding), Speaker (Honoraria); Leo Pharma A/S - Advisory Board (Honoraria), Investigator (Fees), Other (Grants/Research Funding), Speaker (Honoraria); Novartis - Advisory Board (Honoraria), Other (Grants/Research Funding), Speaker (Honoraria); Pfizer Inc. - Advisory Board (Honoraria), Investigator (Fees); Sanofi Genzyme - Advisory Board (Honoraria), Investigator (Fees), Speaker (Honoraria); Sanofi/Regeneron - Advisory Board (Honoraria), Speaker (Honoraria)

Stephany Queiroga; No financial relationships exist with commercial interests.

Steven E. Kempers; No financial relationships exist with commercial interests.

Steven Fagien, MD; Alastin Skincare, Inc - Consultant (No Compensation Received), Investigator (No Compensation Received); Allergan, Inc - Consultant (Fees), Investigator (Fees); Evolus, Inc. - Speaker/Faculty Education (Honoraria); Galderma USA - Consultant (Fees), Investigator (Fees); Revance Therapeutics, Inc. - Consultant (Fees), Investigator (Fees)

Suma Krishnan; No financial relationships exist with commercial interests.

Surya Ravichandran; No financial relationships exist with commercial interests.

T

Tal Zeeli; No financial relationships exist with commercial interests.

Teri Greiling, MD, PhD; Eli Lilly and Company - Investigator (Grants/Research Funding); Janssen Scientific Affairs, LLC - Investigator (Grants/Research Funding)

Tess Lukowiak; No financial relationships exist with commercial interests.

Thien Ninh, MD, MBA; No financial relationships exist with commercial interests.

Thomas Bieber; No financial relationships exist with commercial interests.

Tianshuang Wu, PhD; No financial relationships exist with commercial interests.

Tomoko Fujimoto, MD, PhD; Kaken Pharmaceutical Co., Ltd - Consultant (Fees), Speaker (Fees)

Toshiyuki Yorozuya; No financial relationships exist with commercial interests.

U

Ulrich Knie; Dr. August Wolff GmbH& Co. - Consultant (Honoraria)

V

Veerle Vanvoorden; No financial relationships exist with commercial interests.

Victoria P. Werth, MD; AbbVie - Consultant (Honoraria); arGEN-X - Consultant (Honoraria); AstraZeneca - Advisory Board (Honoraria); Biogen - Consultant (Honoraria), Investigator (Grants/Research Funding); BMS - Consultant (Honoraria); Celgene Corporation - Consultant (Honoraria), Investigator (Grants/Research Funding); Corbus Pharmaceuticals - Investigator (Grants/Research Funding); CSL - Consultant (Honoraria); CSL Behring - Consultant (Honoraria); EMD Serono - Consultant (Honoraria); Genentech, Inc. - Consultant (Honoraria); Gilead Sciences - Consultant (Honoraria), Investigator (Grants/Research Funding); Idera Pharmaceuticals, Inc. - Consultant (Honoraria); Immune Pharmaceuticals - Consultant (Honoraria); Immunotherapeutics - Consultant (Honoraria); Janssen Pharmaceuticals, Inc - Consultant (Honoraria), Investigator (Grants/Research Funding); Lilly ICOS LLC - Consultant (Honoraria); Lupus Foundation of America - Consultant (Honoraria); Medimmune - Consultant (Honoraria); Neovacs - Consultant (Honoraria); Octapharma - Consultant (Honoraria); Pfizer Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding); Principia Biopharma Inc - Data Safety Monitoring Board (Honoraria); Principia Biopharma Inc. - Consultant (Honoraria); Resolve Therapeutics - Consultant (Honoraria); Roche Laboratories - Consultant (Honoraria); Stiefel a GSK company - Consultant (Honoraria); Syntimmune, Inc. - Consultant (Honoraria), Investigator (Grants/Research Funding); UV Therapeutics - Advisory Board (Stock); Viela Bio - Consultant (Honoraria), Investigator (Grants/Research Funding)

Vince Bertucci, MD; Allergan, Inc - Consultant (Fees); Allergan, Inc. - Advisory Board (Fees), Investigator

(Fees), Speaker (Honoraria); Galderma Canada, Inc - Advisory Board (Fees), Speaker (Honoraria); Galderma Laboratories, L.P. - Advisory Board (Fees); Galderma USA - Investigator (Fees); Merz Aesthetics - Advisory Board (Fees), Consultant (Fees), Investigator (Fees); Revance Therapeutics, Inc. - Consultant (Fees), Investigator (Fees), Speaker (Fees); Sinclair Pharma - Advisory Board (Fees); TEOXANE Laboratories - Advisory Board (Other Financial Benefit)

Vivian Laquer; No financial relationships exist with commercial interests.

W

Wesley W Day, PhD; No financial relationships exist with commercial interests.

X

Xian Sun; No financial relationships exist with commercial interests.

Xuejun Liu, PhD; No financial relationships exist with commercial interests.

Y

Yan Li; No financial relationships exist with commercial interests.

Yan Liu, PhD; No financial relationships exist with commercial interests.

Yingping Hou, MD; No financial relationships exist with commercial interests.

Yong Woo Oh, M.D.; No financial relationships exist with commercial interests.

Yu Sung Choi; No financial relationships exist with commercial interests.

Yves Poulin, MD, FRCPC; No financial relationships exist with commercial interests.

Z

Ziqian Geng, PhD; No financial relationships exist with commercial interests.

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