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Industry News

Ortho Dermatologics Names 2018 Aspire Higher Scholarship Recipients. Practical Dermatology, DermWire. Wednesday, August 08, 2018. <http://practicaldermatology.com/dermwire/2018/08/08/ortho-dermatologics-names-2018-aspire-higher-scholarship-recipients>

Ortho Dermatologics, a division of Bausch Health Companies Inc., has named the 2018 honorees of the Aspire Higher program, which since 2013 has granted more than \$450,000 in scholarships to students who have been affected by dermatologic conditions. This year nine students will receive scholarships of \$10,000 each to pursue graduate or undergraduate degrees at an accredited, nonprofit, two- or four-year college, university, or advanced (post-high school) vocational or technical school. "At Ortho Dermatologics, we understand that there is more to skin conditions than what meets the eye, and managing them often comes with challenges. We're proud to continue the Aspire Higher program to help students who have faced such challenges reach their educational goals, while also recognizing the positive impact dermatologists have had on their lives," says Bill Humphries, president, Ortho Dermatologics. The 2018 honorees were selected from nearly 1,200 applications, based in part on essays sharing their experience of living with a dermatologic condition, as well as the role that a dermatologist, physician assistant, or nurse practitioner has played in helping treat it. The applications were judged by an independent panel of dermatologists from across the country. "In the six years that I have served on the judging panel for the Aspire Higher program, I continue to be inspired by these students' dedication to education and passion to excel in their future careers," adds Jonathan S. Weiss, MD, dermatologist at Gwinnett Dermatology, Snellville, GA. "This is one of the most outstanding initiatives taking place in the dermatology community, and I am proud to join Ortho Dermatologics to help these outstanding students achieve their educational dreams and continue aspiring higher." The Aspire Higher program recognizes students at varying stages of their educational careers through scholarships in three categories, including the Undergraduate Scholar Awards for those pursuing undergraduate degrees, the Graduate Scholar Awards for those pursuing graduate degrees, and the Today's Woman Scholar Awards for mothers pursuing undergraduate or graduate degrees.

The 2018 Aspire Higher recipients include:

- Undergraduate Scholar Award ◦ Jayla Chanel Davis, Alabaster, AL – University of South Alabama
- Daisy Pena, San Jose, CA – California State University Long Beach
- Mary Margaret Jordan, Melissa, TX – Baylor University
- Graduate Scholar Award ◦ Zoe Smith, Ferndale, MI – Wayne State School of Medicine
- Niki Vora, Buena Park, CA – UC Berkeley - UCSF Joint Medical Program
- Caitlin Parker, Taylorsville, UT – Roseman University of Health Sciences - College of Dental Medicine
- Today's Woman Scholar Award ◦ Laura Lukens, Evanston, IL – Northwestern University - Kellogg School of Management
- Elizabeth Hendrix, Holladay, UT – University of Utah
- Jennifer Hurley, Hammonton, NJ – Fairleigh Dickinson University

"With the generous help of Ortho Dermatologics and the Aspire Higher scholarship program, I'm thrilled to continue my education at California State University Long Beach," said Daisy Pena. "It is wonderful that this program exists to help those who have struggled with their skin accomplish their academic goals – and I look forward to taking full advantage of this incredible opportunity while also raising awareness of skin conditions like alopecia." To learn more about the Aspire Higher scholarship, visit www.AspireHigherScholarships.com. The 2019 Aspire Higher scholarship program will begin accepting applications in early 2019.

Almirall to Acquire Allergan's US Medical Dermatology Unit. Practical Dermatology, DermWire. Friday, August 03, 2018. <http://practicaldermatology.com/dermwire/2018/08/03/almirall-to-acquire-allergans-us-medical-dermatology-unit>

Almirall is acquiring a portfolio of five products from Allergan's Medical Dermatology unit in the United States, conditional to the clearance by the relevant authorities. The portfolio includes Aczone® (dapson), Tazorac® (tazarotene), Azelex® (azelaic acid) and Cordran® Tape (fludroxycortide), as well as Seysara™ (sarecycline), a new first in class tetracycline-derived antibiotic with anti-inflammatory properties for the treatment of moderate to severe acne vulgaris, in patients 9 years of age and older, with a best-in-class safety profile. FDA approval of Seysara (sarecycline) is anticipated in Q4 2018. The acquisition has been announced for a cash consideration of \$550 Million at closing. The portfolio had net sales of \$70 Million in H1 2018. Almirall expects peak sales of Seysara (sarecycline) from \$150 Million to \$200 Million. Peter Guenter, Chief Executive Officer, Almirall, commented, "This is a transformational deal for Almirall. It will reinforce and consolidate our position in the world's largest dermatology market and is a well-balanced portfolio of mature and growth brands with a major launch opportunity of an innovative New Chemical Entity (NCE). It is perfectly complementary to our existing platform and will be immediately accretive to our earnings. It offers us medium to long term top and bottom line growth opportunities. Moreover, it will allow for an expanded platform to launch KX2-391, which has the potential to become a new standard of care in actinic keratosis." With this acquisition, Almirall says it consolidates and reinforces its presence in the US, the largest market in the world, and expands its range of dermatological products, representing a transformational step for Almirall US as well as Almirall as a whole. The transaction is subject to be approved by antitrust authorities in the US. Almirall does not envisage any significant obstacles to closing by Q4 2018. Strategic and straight forward transaction in one single geography.

IRB Approval Means BioPharmX To Move Ahead on Phase 2 Trial of BPX-04 for Rosacea. Practical Dermatology, DermWire. Wednesday, August 01, 2018. <http://practicaldermatology.com/dermwire/2018/08/01/irb-approval-means-biopharmx-to-move-ahead-on-phase-2-trial-of-bpx-04-for-rosacea>

BioPharmX Corporation has received Institutional Review Board approval for its phase 2 study of BPX-04 for the treatment of papulopustular rosacea. Based on data from its open-label feasibility study which assessed tolerability in subjects with papulopustular rosacea, BioPharmX has selected the 1% minocycline concentration for use in the PRISM phase 2 trial to evaluate the safety and efficacy of BPX-04, continuing in its patient-centric commitment to antibiotic stewardship by utilizing a lower dose of antibiotics for patients. The 12-week, open-label feasibility study assessed the tolerability of BPX-04 topical minocycline gel in 30 subjects with moderate-to-severe papulopustular rosacea. Once-daily administration of either 1%, 2%, or vehicle was applied to the face. All treatment arms were well tolerated and there were no serious adverse events, further demonstrating the patient-centric benefits of the BioPharmX HyantX™ delivery system underpinning BPX-04. "Optimizing delivery to the source of the disease, while minimizing the risks of oral antibiotics in patients with rosacea, has the potential to influence better prescribing options for dermatologists," said Neal Bhatia, MD, a board-certified dermatologist at Therapeutics Clinical Research in San Diego and the study's principal investigator. "Dermatologists have long desired a new topical antibiotic option that minimizes the risks of systemic side effects while not contributing to the bigger issue of systemic antibiotic resistance." BPX-041 is the company's second candidate utilizing the novel, patented HyantX™ delivery system, which is designed to stabilize and solubilize hydrophilic molecules in an anhydrous gel environment. This delivery system is being developed to carry a variety of active ingredients – and even combinations of actives – into the skin. Research has shown the delivery system may allow for maximum solubility for multiple actives, which is intended to lead to

enhanced skin penetration and increased efficacy and tolerability, has antibacterial properties, and hydrates the skin, making the delivery system a valuable asset in pipeline development and strategic partnering.

New Medical News

Gut microbiota alterations in moderate to severe acne vulgaris patients. Yan HM, Zhao HJ, Guo DY, et al. *J Dermatol.* 2018 Aug 13. doi: 10.1111/1346-8138.14586. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/30101990>

Acne vulgaris is a chronic inflammatory dermatosis affecting approximately 85% of adolescents. There are many factors contributing to the development of this ailment. A recent study indicated that gut microbiota takes part in the pathogenesis of acne. We aimed to investigate the link between acne vulgaris and gut microbiota. A total of 31 moderate to severe acne vulgaris patients and 31 healthy controls were enrolled. We collected their feces, and gut microbiota was evaluated by the hypervariable regions of 16S rRNA genes through high-throughput sequencing. We identified links between acne vulgaris and changes of gut microbiota. At the phylum level, Actinobacteria (0.89% in acne patients and 2.84% in normal controls, $P = 0.004$) was decreased and Proteobacteria (8.35% in acne patients and 7.01% in normal controls, $P = 0.031$) was increased. At the genus level, Bifidobacterium, Butyricoccus, Coprobacillus, Lactobacillus and Allobaculum were all decreased. The observed difference in genera between acne patients and healthy controls provides a new insight into the link between gut microbiota changes and acne vulgaris risk.

Acne: A Side Effect of Masculinizing Hormonal Therapy in Transgender Patients. Motosko CC, Zakhem GA, Pomeranz MK, Hazen A. *Br J Dermatol.* 2018 Aug 12. doi: 10.1111/bjd.17083. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/30101531>

Masculinizing hormonal treatment in transgender men has the potential to increase the level of androgens at end organs, including the pilosebaceous unit. Androgen-induced sebocyte growth and differentiation, sebum production, and infundibular keratinization may underlie the development of acne vulgaris among patients receiving this therapy. Despite the incidence of treatment-related acne and the unique considerations in treating transgender men, studies addressing this topic among this patient population are limited. Generally, standard guidelines for the treatment of acne can be followed in treating these patients; however, several medical, social, and psychologic factors should be considered. The aim of this article is to familiarize dermatologists with the sensitivities and challenges of treating acne in transgender male individuals.

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The new therapeutic choice of tranexamic acid solution in treatment of erythematotelangiectatic rosacea. Bageorgou F, Vasalou V, Tzanetakou V, Kontochristopoulos G. *J Cosmet Dermatol.* 2018 Aug 11. doi: 10.1111/jocd.12724. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/30099833>

Background: Erythematotelangiectatic rosacea is a common, chronic, relapsing disease characterized mainly by vascular components, for which many therapies may exist but with limited efficacy. Objectives: We decided to test the efficacy of tranexamic acid when applied topically on the affected areas. Tranexamic acid is an antifibrinolytic,

thus we considered it could be effective at this type of rosacea. **Methods:** This is an unblinded study. We included 20 patients, having erythematotelangiectatic rosacea. All patients were women between 27 and 65 years-old. We divided the patients in two groups, the first group was treated only with tranexamic acid solution (Transamin inj/sol 500 mg/5 mL) infused wet dressing for 20 minutes, and the second group was treated with microneedling simultaneously with tranexamic acid solution topical application followed by tranexamic acid solution infused dressing therapy, every 15 days for four sessions. **Results:** The improvement assecion was outlined according to the Investigator Global Assessment of Rosacea Severity Score (IGA-RSS) and the use of clinical photos and dermoscopy. All patients were improved in the end of the therapy. There was statistically significant improvement, 2 units IGA-RSS in the first group, whereas 3 units IGA-RSS in the second group. The improvement lasted more than four months. The tolerability of the use of tranexamic acid was also assessed. **Conclusions:** According to our results a new really promising simple, safe and cheap treatment option targeting mainly to the vascular net and the erythema of rosacea is proposed.

Platelet-Rich Plasma Augments Subcision in Atrophic Acne Scars: A Split-Face Comparative Study.

Deshmukh NS, Belgaumkar VA. *Dermatol Surg.* 2018 Aug 10. doi: 10.1097/DSS.0000000000001614. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/30102625>

Background: Acne has a prevalence of 90% among adolescents. Facial scarring affects 75% of patients. Autologous platelet-rich plasma (PRP) is a novel treatment option for acne scar management and can be used as an adjuvant to acne scar revision procedures. Owing to its remodeling properties, PRP when used as an adjuvant reduces the total number of sittings. **Objective:** To compare efficacy of autologous PRP and subcision against subcision alone in acne scars. **Methodology:** It was an experimental analytical study conducted over a period of 2 years. Forty patients successfully completed the trial. It was a split-face study in which the right side of the face was the study side where autologous PRP was injected into each scar after performing subcision. The left side of the face was the control side where only subcision was performed. Digital photographs were taken at every sitting. Analysis was performed using the Wilcoxon signed-rank test and Mann-Whitney tests in SPSS software. **Results:** Platelet-rich plasma and subcision showed greater improvement (32.08%) in postacne scars as compared to subcision alone (8.33%). Rolling acne scars responded greatest (39.27%) followed by box-type scars (33.88%). **Conclusion:** Platelet-rich plasma and subcision act synergistically to improve the appearance of acne scars.

Treatment of erythematotelangiectatic rosacea, facial erythema, and facial telangiectasia with a 577-nm pro-yellow laser: a case series.

Kapicioglu Y, Sarac G, Cenk H. *Lasers Med Sci.* 2018 Aug 10. doi: 10.1007/s10103-018-2606-6. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/30097757>

Various lasers have been used for the treatment of erythematotelangiectatic rosacea (ETR), facial erythema (FE), and facial telangiectasias (FT). The assessment of the treatments of all of these conditions with a 577-nm pro-yellow laser has not been reported yet. The aim of this work was to assess the efficacy and safety of the 577-nm pro-yellow laser in ETR, FE, and FT. Forty patients suffering from ETR, FE, and FT (25 female and 15 male) were enrolled in this study. All of the patients were treated with 577-nm pro-yellow laser (QuadroStarPRO YELLOW® Asclepion Laser Technologies, Germany) at 4-week intervals, for one to four sessions. The assessment of the treatment was made based on the digital photographs and the percentage of fading of the erythema and telangiectasias in the lesions. Significant clinical improvement (80-100%) was observed in the first or second sessions of the treatment in FE and ETR patients and in second and fourth sessions of the treatment in FT patients. The treatment was very well tolerated. No side effect was observed except for a few patients who had mild to moderate erythema fading away in 12-24 h.

This case series has shown that the pro-yellow laser is a very effective, safe, and well-tolerated treatment for ETR, FE, and FT.

Lactase Persistence, Milk Intake, and Adult Acne: A Mendelian Randomization Study of 20,416 Danish Adults.

Juhl CR, Bergholdt HKM, Miller IM, et al. *Nutrients*. 2018 Aug 8;10(8). pii: E1041. doi: 10.3390/nu10081041. <https://www.ncbi.nlm.nih.gov/pubmed/30096803>

Whether there is a causal relationship between milk intake and acne is unknown. We tested the hypothesis that genetically determined milk intake is associated with acne in adults using a Mendelian randomization design. LCT-13910 C/T (rs4988235) is associated with lactase persistence (TT/TC) in Northern Europeans. We investigated the association between milk intake, LCT-13910 C/T (rs4988235), and acne in 20,416 adults (age-range: 20-96) from The Danish General Suburban Population Study (GESUS). The adjusted observational odds ratio for acne in any milk intake vs. no milk intake was 0.93(95% confidence interval: 0.48-1.78) in females and 0.49(0.22-1.08) in males aged 20-39 years, and 1.15(95% confidence interval: 0.66-1.99) in females and 1.02(0.61-1.72) in males above 40 years. The unadjusted odds ratio for acne in TT+TC vs. CC was 0.84(0.43-1.62) in the age group 20-39 years, and 0.99(0.52-1.88) above 40 years. We did not find any observational or genetic association between milk intake and acne in our population of adults.

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Control of Propionibacterium acnes by natural antimicrobial substances: Role of the bacteriocin AS-48 and lysozyme.

Cebrián R, Arévalo S, Rubiño S, et al. *Sci Rep*. 2018 Aug 6;8(1):11766. doi: 10.1038/s41598-018-29580-7. <https://www.ncbi.nlm.nih.gov/pubmed/30082920>

We report the high susceptibility of several clinical isolates of *Propionibacterium acnes* from different sources (skin, bone, wound exudates, abscess or blood contamination) to the head-to-tail cyclized bacteriocin AS-48. This peptide is a feasible candidate for further pharmacological development against this bacterium, due to its physicochemical and biological characteristics, even when it is growing in a biofilm. Thus, the treatment of pre-formed biofilms with AS-48 resulted in a dose- and time-dependent disruption of the biofilm architecture beside the decrease of bacterial viability. Furthermore, we demonstrated the potential of lysozyme to bolster the inhibitory activity of AS-48 against *P. acnes*, rendering high reductions in the MIC values, even in matrix-growing cultures, according to the results obtained using a range of microscopy and bioassay techniques. The improvement of the activity of AS-48 through its co-formulation with lysozyme may be considered an alternative in the control of *P. acnes*, especially after proving the absence of cytotoxicity demonstrated by these natural compounds on relevant human skin cell lines. In summary, this study supports that compositions comprising the bacteriocin AS-48 plus lysozyme must be considered as promising candidates for topical applications with medical and pharmaceutical purposes against dermatological diseases such as acne vulgaris.

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Acne vulgaris severity graded by in vivo reflectance confocal microscopy and optical coherence tomography.

Fuchs CSK, Andersen AJB, Ardigo M, et al. *Lasers Surg Med*. 2018 Aug 2. doi: 10.1002/lsm.23008. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/30070369>

Introduction: Acne is an inflammatory disease of the pilosebaceous unit, which can be investigated in vivo using reflectance confocal microscopy (RCM) and optical coherence tomography (OCT). **Objectives:** By means of RCM and OCT to identify morphological characteristics of acne that may be associated with clinical acne severity. **Methods:** Patients with mild to moderate facial acne (n = 14, Investigators Global Assessment scale, IGA 1-3), and healthy participants (n = 7, IGA 0) were included in this explorative study. A total of 108 RCM image blocks and 54 OCT scans (each RCM and OCT image measuring 6 × 6 mm) were captured from lesional-, perilesional, and lesion-free skin areas. Acne lesions, infundibular regions of follicles and inflammation degree were compared in acne patients and healthy participants. **Results:** Combined use of RCM and OCT demonstrated infundibular morphology, acne lesions, and blood flow. RCM images of perilesional- and lesion-free skin in acne patients revealed follicle infundibula with hyperkeratinized borders and abundant keratin plugs, contrasting skin of healthy participants. Higher acne severity related to increased number of follicles with hyperkeratotic borders (P = 0.04) and keratin plugs (P = 0.006), increased infundibulum diameter (P < 0.001), increased density of inflammatory cells (P < 0.001), and blood flow (P = 0.03). Acne lesion morphology was not associated with acne severity. **Conclusion:** Combined use of RCM and OCT elucidated distinctive follicle infundibulum characteristics and inflammation degree that were associated with acne severity. Future trials may apply imaging techniques to support clinical acne grading, and monitor treatment efficacy.

Factors Aggravating or Precipitating Acne in Indian Adults: A Hospital-Based Study of 110 Cases. George RM, Sridharan R. *Indian J Dermatol.* 2018 Jul-Aug;63(4):328-331. doi: 10.4103/ijd.IJD_565_17. <https://www.ncbi.nlm.nih.gov/pubmed/30078878>

Background: Although acne is principally a disorder of adolescence, the number of adult patients with acne is increasing. Adult acne is defined as the presence of acne beyond the age of 25 years. There is relatively few data on the prevalence and studies of acne in adult population. **Aim and Objectives:** To analyze the various factors that aggravate or precipitate acne vulgaris in Indian adults. **Materials and methods:** The study was done at the Department of Dermatology at a tertiary care center in Kerala for a period of 1 year. A total of 110 patients above the age of 25 year diagnosed clinically as acne vulgaris were included in the study. A detailed history regarding age of onset, duration, type of acne, family history, whether there was any exacerbation related to food, cosmetics, drugs, emotional stress, seasonal variation, sunlight, sweating, pregnancy, menstruation and smoking was taken. **Results:** Majority of patients with adult acne were in the age group 26-30 years and there was a clear female preponderance. Persistent acne was more common than late onset acne. Food items and cosmetics were attributed to exacerbation by 47.3% and 40% of patients respectively; 32.7% patients had exacerbations during stress, 26.4% following sun exposure and 23.6% after sweating. About 48% patients had first degree relatives with present or past history of acne. Most of the female patients had premenstrual flare of acne, which was much more common among patients with persistent acne. Pregnancy had no effect on acne in majority of patients. Seasonal variation was observed in 44.5% patients, most of them showing exacerbation in summer months. **Conclusion:** Acne as a disease lasts longer, persists into adulthood and requires treatment well into the forties. Unlike teenage acne, where males tend to be affected more commonly, post adolescent acne mainly affects females. It is therapeutically rewarding to identify the concerned triggers and aggravating factors and be able to deal with them.

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Characterization and biological activity of PVA hydrogel containing chitooligosaccharides conjugated with gallic acid. Park HH, Ko SC, Oh GW, et al. *Carbohydr Polym.* 2018 Oct 15;198:197-205. doi: 10.1016/j.carbpol.2018.06.070. Epub 2018 Jun 18. <https://www.ncbi.nlm.nih.gov/pubmed/30092991>

Propionibacterium acnes plays a key role in the onset of inflammation leading to acne and in downregulation of the defense system against oxidative stress. Therefore, antibiotics such as macrolides, tetracyclines, azelaic acid, and erythromycin are used to reduce microbial proliferation and resulting inflammation. Nonetheless, antibiotic treatment has side effects including cytotoxicity, allergy, and diarrhea. Therefore, recent studies were focused on the development of alternative antimicrobial materials. We conjugated chitoooligosaccharide (COS) with gallic acid (GA) by the hydrogen peroxide-mediated method and evaluated antioxidant and antimicrobial activities. Then, we fabricated a polyvinyl alcohol (PVA) hydrogel containing COS conjugated with GA (GA-COS) for acne treatment. GA-COS at 5-10 kDa showed an excellent antioxidant activity and a better antimicrobial activity against *P. acnes* as compared with COS. In addition, the PVA hydrogel with GA-COS inhibited intracellular formation of reactive oxygen species and exerted antimicrobial action better than controls did.

Clinical Reviews

Why we continue to use the name *Propionibacterium acnes*. Alexeyev OA, Dekio I, Layton AM, et al. *Br J Dermatol.* 2018 Aug 13. doi: 10.1111/bjd.17085. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/30101491>

Propionibacterium acnes is a gram-positive anaerobic rod commonly associated with *acne vulgaris*. It is a normal commensal of the human skin and can be linked to a wide variety of diseases, such as central nervous system shunt infections, joint infections, endocarditis and prostate infection. We read with interest the proposal to reclassify selected species within the genus *Propionibacterium* to the proposed novel genus *Cutibacterium*.

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Dairy Intake and *Acne Vulgaris*: A Systematic Review and Meta-Analysis of 78,529 Children, Adolescents, and Young Adults. Juhl CR, Bergholdt HKM, Miller IM, et al. *Nutrients.* 2018 Aug 9;10(8). pii: E1049. doi: 10.3390/nu10081049. <https://www.ncbi.nlm.nih.gov/pubmed/30096883>

A meta-analysis can help inform the debate about the epidemiological evidence on dairy intake and development of acne. A systematic literature search of PubMed from inception to 11 December 2017 was performed to estimate the association of dairy intake and acne in children, adolescents, and young adults in observational studies. We estimated the pooled random effects odds ratio (OR) (95% CI), heterogeneity (I^2 -statistics, Q-statistics), and publication bias. We included 14 studies ($n = 78,529$; 23,046 acne-cases/55,483 controls) aged 7-30 years. ORs for acne were 1.25 (95% CI: 1.15-1.36; $p = 6.13 \times 10^{-8}$) for any dairy, 1.22 (1.08-1.38; $p = 1.62 \times 10^{-3}$) for full-fat dairy, 1.28 (1.13-1.44; $p = 8.23 \times 10^{-5}$) for any milk, 1.22 (1.06-1.41; $p = 6.66 \times 10^{-3}$) for whole milk, 1.32 (1.16-1.52; $p = 4.33 \times 10^{-5}$) for low-fat/skim milk, 1.22 (1.00-1.50; $p = 5.21 \times 10^{-2}$) for cheese, and 1.36 (1.05-1.77; $p = 2.21 \times 10^{-2}$) for yogurt compared to no intake. ORs per frequency of any milk intake were 1.24 (0.95-1.62) by 2-6 glasses per week, 1.41 (1.05-1.90) by 1 glass per day, and 1.43 (1.09-1.88) by ≥ 2 glasses per day compared to intake less than weekly. Adjusted results were attenuated and compared unadjusted. There was publication bias ($p = 4.71 \times 10^{-3}$), and heterogeneity in the meta-analyses were explained by dairy and study characteristics. In conclusion, any dairy, such as milk, yogurt, and cheese, was associated with an increased OR for acne in individuals aged 7-30 years. However, results should be interpreted with caution due to heterogeneity and bias across studies.

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Molecular interactions of different steroids contributing to sebum production. Review. Cabeza M, Bautista L, Bravo MG, Heuze Y. *Curr Drug Targets*. 2018 Aug 7. doi: 10.2174/1389450119666180808113951. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/30088446>

Considerable progress has been made in learning about the physiology and biochemistry of the sebaceous glands and several of the diseases that affect this component of the skin. Of these diseases, acne has particular importance. Although it is associated with adolescence, because of the hormonal changes that take place in this stage, when it is severe it can cause depression. Moreover, in a considerable proportion of acne sufferers both adolescent and adult, it can produce tumors and deformation of the sebaceous glands. This seriously affects the sufferers to the point where it may limit their professional activities because they do not want to be seen in public. In this article we review several important issues related to the sebaceous gland, with the objective of contributing to advances in current treatments. The sebaceous gland is described as an intracrine organ, which can codify a number of different hormones and receptors. A detailed review is given of steroid metabolism in the skin, the presence of different hormone receptors, and hormone influence on lipogenesis at different ages. The mechanism of action of androgens and progestogens is analyzed in relation to lipogenesis carried out in the sebaceous glands. Several new steroidal compounds are proposed. Their mechanism of action has been elucidated and they have been shown to influence lipogenesis in sebaceous glands, modifying their structure and biochemistry. These molecules offer potential for new treatment options.

Current non-viral siRNA delivery systems as a promising treatment of skin diseases. Rosa J, Suzuki I, Kravicz M, et al. *Curr Pharm Des*. 2018 Aug 7. doi: 10.2174/1381612824666180807120017. [Epub ahead of print] <https://www.ncbi.nlm.nih.gov/pubmed/30084329>

Background: Gene therapy is a new approach to discover and treat many diseases. It has attracted considerable attention from researchers in the last decades. The gene therapy through RNA interference has been considered one of the most recent and revolutionary approaches used in individualized therapy. In the last years, we have witnessed the rapid development in the field of the gene silencing and knockdown by topical siRNA. Its application in gene therapy has become an attractive alternative for drug development. **Methods:** This article will address topical delivery of siRNA as a promising treatment for skin disorders. An update on the advances in siRNA-based nanocarriers as a powerful therapeutic strategy for several skin diseases will be discussed giving emphasis on in vitro evaluations. **Results:** Through the in-depth review of the literature on the use of siRNAs for skin diseases we realize how widespread this use is. We have also realized that nanoparticles as non-viral vectors are increasingly being explored. Skin diseases where the use of siRNA has been explored most are skin cancer (melanoma and non-melanoma), psoriasis, vitiligo, dermatitis and leprosy. But we also report here other diseases where the use of siRNA has been growing as acne, alopecia areata, cutaneous leishmaniasis, mycoses, herpes, epidermolysis bullosa and oculocutaneous albinism. Also highlighted, the first clinical trial of siRNA for cutaneous diseases, aimed at Pathyounychia Congenita. **Conclusion:** The treatment of skin diseases based on topical delivery of siRNA, which act by inhibiting the expression of target transcripts, offers many potential therapeutic advantages for suppressing genes into the skin.

Comparison of the Efficacy of Azithromycin Versus Doxycycline in Acne Vulgaris: A Meta-Analysis of Randomized Controlled Trials. Kim JE, Park AY, Lee SY, et al. *Ann Dermatol*. 2018 Aug;30(4):417-426. doi: 10.5021/ad.2018.30.4.417. <https://www.ncbi.nlm.nih.gov/pubmed/30065581>

Background: Acne vulgaris is one of the most common disorders of the pilosebaceous unit. Although doxycycline is considered to be a first-line anti-acne antibiotic, various other antibiotics have been tried due to its adverse effects and contraindications. We performed a meta-analysis of randomized controlled trials (RCTs) that compared the efficacy of oral azithromycin pulse therapy with that of oral daily doxycycline in the management of moderate to severe acne vulgaris. **Methods:** Five scientific databases (MEDLINE, EMBASE, Cochrane Library, SCOPUS, and Web of Science) were searched to identify relevant studies. A review of 1,341 publications produced six RCTs that met our predefined inclusion criteria. The clinical outcome measures were remaining acne lesion counts, patients' self-assessment of treatment, and the investigators' assessment of treatment after 12 weeks. **Results:** We included six studies assessing 906 patients with moderate to severe acne vulgaris. Meta-analyses of clinical outcome measures revealed no significant difference between the two groups regarding remaining acne lesion counts ($p=0.27$), patients' self-assessment of treatment ($p=0.67$), and the investigators' assessment of treatment ($p=0.32$). The incidence of severe adverse events leading to the discontinuation of therapy was higher in the doxycycline daily therapy group when compared with the azithromycin pulse therapy group. **Conclusion:** This study indicates that azithromycin pulse therapy is equivalent to doxycycline at 12 weeks in the efficacy of the treatment for moderate to severe acne vulgaris. Therefore, oral azithromycin pulse therapy may be a good alternative to doxycycline in the management of acne for those unable to tolerate doxycycline.

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Patient Counseling/Communication

Are you equipped to identify depression in your acne patient? By Whitney J. Palmer. Aug 13, 2018. Dermatology Times. <http://www.dermatologytimes.com/current-and-emerging-treatments-acne/are-you-equipped-identify-depression-your-acne-patient>

“As dermatologists, we are trained in managing acne. We can provide early and effective treatment that improves the physical and psychological effects. It is up to us to bridge the gap between those suffering from acne and their access to medical treatment.” Acne (©OcskayBence/Shutterstock.com) Of all dermatological conditions, acne vulgaris is the most common. While its outward affects are easily noticeable, the internal ones — reduced self-esteem, decreased self-image, and increased anxiety — often go undiagnosed. As a dermatologist, though, you can help reverse those effects. In the United States, approximately 85 percent of adolescents and two-thirds of adults over age 18 struggle with AV. It's presence, according to a literature review published in the International Journal of Women's Dermatology, is associated with higher rates of depression, anxiety, social isolation, suicidal ideation, and suicide attempts. While women and individuals with severe acne vulgaris are most commonly affected, it can have significant negative impacts on anyone. Of the affected group, 70-80 percent use self-prescribed topical treatments, but only between 5-28 percent seek care from a dermatologist. Patients with moderate-to-severe acne vulgaris (approximately 61 percent of them) are more likely to pursue medical intervention. Overall, individuals with AV take an average of 22.2 months to see a professional. You can alleviate the stress for patient who come to see you, the study authors wrote. “As dermatologists, we are trained in managing acne. We can provide early and effective treatment that improves the physical and psychological effects,” the authors wrote. “It is up to us to bridge the gap between those suffering from acne and their access to medical treatment.” Still, be prepared for up to half being unable to follow treatment plans due to financial reasons, the authors wrote. **Assessing acne vulgaris:** According to the literature review of 13 studies on acne vulgaris and self-esteem from 11 countries, nearly 90 percent of patients report feeling embarrassed by the condition. The earlier acne vulgaris shows up, the younger the age at which a patient will begin to report self-esteem

and self-image problems. However, older adults aren't immune to the societal implications of acne. Middle school children are among the hardest hit with decreased self-esteem. Not only are they already dealing with changing hormones, but this age group is also prone to finding and latching on to reasons to socially isolate and reject someone. In fact, the authors report, moderate-to-severe acne vulgaris in this age group is linked to higher incidences of bullying and taunting, such as verbal and physical aggression, as well as social exclusion. The authors also report nearly 62 percent of adults over age 18 experience increased embarrassment and greater self-consciousness if they develop acne vulgaris. What you can do: According to the American Academy of Dermatology (AAD), one of the most important steps you can take is strengthening your relationships with primary care providers, encouraging them to refer their acne vulgaris patients to you as early as possible. To see satisfactory results, the AAD recommends these patients seek care in a medical setting. In many cases, patients perceive their acne vulgaris to be far worse than it is, so you can answer their questions, allay their frustrations and fears, such as being afraid their acne vulgaris is contagious, and establish a therapeutic protocol. At their first appointment, have patients fill out forms that outline their self care so you know what steps they're already taking to address their acne vulgaris and where to go from there. "Because both objective and subjective severity can influence a patient's self-image, we recommend that patients evaluate their own acne vulgaris," the authors wrote. "If they perceive their acne as being more severe than an objective examination suggests, a more aggressive approach in stepping up therapies to help them achieve their goals may be warranted." Even individuals with mild acne can benefit from an isotretinoin prescription, the authors wrote, because it not only improves the condition, but it has also been linked to reduced anxiety and depression, as well as augmented self-esteem. Be sure, though, to manage patient expectations about how long the medication will take to work and what differences he or she will be able to see in their skin's appearance. In addition, discuss camouflage techniques that can cover their acne vulgaris as a strategy to help reduce how noticeable the condition is. Suicide: Patients suffering from moderate-to-severe acne vulgaris also face a two to three times greater risk of suicidal thoughts, the authors wrote. While treating patients for these thoughts or suicide attempts is outside your medical purview, the authors did offer guidance on how to identify patients with these struggles. If you encounter patients exhibiting these behaviors, notify their primary care providers: Poor eye contact, Angry or negative verbalization, Poor self-care, Poor hygiene, Compulsive behaviors, Self-mutilating behaviors. Ultimately, the authors wrote, the goal of treating acne vulgaris isn't simply improving the skin's outward appearance. It's also addressing the emotional and psychological implications the condition can prompt with dermatologists being in a unique position to do so successfully. "Perhaps most importantly, a dermatologist who prescribes appropriate medical therapy, manages patient expectations, and educates patients on the results and timing will best help meet patients' medical and psychological needs," the authors wrote. "Effective treatment improves patients' self-esteem, and, as dermatologists, we have an armamentarium of treatment options to improve acne vulgaris."