Stanford



Anthony Oro, MD, PhD

Eugene and Gloria Bauer Professor

Dermatology

NIH Biosketch available Online Curriculum Vitae available Online

CLINICAL OFFICE (PRIMARY)

- **Adult Dermatology Clinic**

  450 Broadway St

  Pavilion B MC 5334

  Redwood City, CA 94063

  Tel (650) 723-6316 **Fax** (650) 721-3476

ACADEMIC CONTACT INFORMATION

- **Administrative Contact**

  Inna Gitman - Admin Assistant

  Email innag@stanford.edu

  Tel 650-736-7473

Bio

BIO

Anthony E. Oro, M.D., Ph.D., is the Eugene and Gloria Bauer Professor of Dermatology, Associate Director of the Center for Definitive and Curative Medicine, and the co-director of the Child Health Research Institute. He is co-founder of the Program in Epithelial Biology, and an active member of the Institute for Stem Cell Biology and Regenerative Medicine, Children's Health Research Institute, Bio-X, and the Program in Cancer Biology. His research interests encompass cancer genomics and tumor evolution, stem cell biology and hair/skin development and regeneration, and definitive molecular and cellular therapeutics. His clinical interests include hair biology, non-melanoma skin cancer, and stem cell-based therapies for genetic skin diseases.

CLINICAL FOCUS

- Cancer > Cutaneous (Dermatologic) Oncology
- Dermatology
- Skin Cancer
- Hair disorders
- Genetic Skin Disease
- Epidermolysis Bullosa
- Therapeutic Reprograming
- Therapeutic Reprogramming
- Stem Cell
- Regenerative Medicine

ACADEMIC APPOINTMENTS

- Professor, Dermatology
- Member, Bio-X
- Member, Institute for Stem Cell Biology and Regenerative Medicine

- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Assoc Director, Center for Definitive and Curative Medicine, (2016- present)
- Co-Director, Child Health Research Institute, (2017- present)

PROFESSIONAL EDUCATION

- Medical Education: University of California San Diego School of Medicine (1993) CA
- Residency: Stanford University Dermatology Residency (1997) CA
- Internship: Stanford University Internal Medicine Residency (1994) CA
- Board Certification: Dermatology, American Board of Dermatology (1998)

LINKS

- Personal Web site: http://orolab.stanford.edu

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our lab studies skin stem cells to understand mechanisms of tissue regeneration and carcinogenesis. We have a longstanding interest in the mechanisms of Sonic hedgehog (Shh) signaling in the hair follicle and n the pathogenesis of the most common human tumor, basal cell carcinoma (BCCs) of the skin. We have provided clinical evidence for the first hedgehog pathway inhibitor and are developing novel targets for next generation inhibitors that target the transcription factor Gli. We are studying the mechanisms of tumor evolution and the development of chemoresistance to targeted agents in both patients and mouse models using genomics and bioinformatic methods followed by functional validation.

We are also interested in the mechanisms of human skin development and early ectodermal differentiation and have developed in vitro human skin differentiation from embryonic stem cells. Using this system, we are exploring how early ectoderm commits to stratified epithelium. We have used our system, in collaboration with other labs at Stanford, to manufacture corrected human epidermal sheets from patient-specific iPS cells.

CLINICAL TRIALS

- Characteristics of Patients With Recessive Dystrophic Epidermolysis Bullosa, Recruiting
- A Phase 1 Study of IPI-926 in Patients With Advanced and/or Metastatic Solid Tumor Malignancies, Not Recruiting
- A Phase II Study of Efficacy and Safety in Patients With Locally Advanced or Metastatic Basal Cell Carcinoma, Not Recruiting
- A Study Evaluating the Efficacy and Safety of Vismodegib (GDC-0449) in Operable Basal Cell Carcinoma, Not Recruiting
- A Study Evaluating the Efficacy and Safety of Vismodegib (GDC-0449, Hedgehog Pathway Inhibitor) in Patients With Advanced Basal Cell Carcinoma, Not Recruiting
- A Study in Advanced Cancer, Not Recruiting
- A Study of Vismodegib (GDC-0449) in Patients Treated With Vismodegib in a Previous Genentech-sponsored Phase I or II Cancer Study, Not Recruiting
- A Study of Vismodegib (GDC-0449) in Patients With Locally Advanced or Metastatic Basal Cell Carcinoma, Not Recruiting
- Arsenic Trioxide in Treating Patients With Basal Cell Carcinoma, Not Recruiting
- Levocarnitine in Treating Patients With Vismodegib-Associated Muscle Spasms, Not Recruiting
- Pilot LDE225 in Locally Advanced or Metastatic BCC + Previously Tx Non-LDE225 Smoothened Inhibitors, Not Recruiting

- Pilot Study of Sonidegib and Buparlisib in Treating Patients With Advanced or Metastatic Basal Cell Carcinoma, Not Recruiting
- Tofacitinib for the Treatment of Alopecia Areata and Its Variants, Not Recruiting
- Topical Itraconazole in Treating Patients With Basal Cell Cancer, Not Recruiting
- Vismodegib in Treating Patients With Basal Cell Carcinoma (BCC), Not Recruiting

Teaching

STANFORD ADVISEES

Med Scholar Project Advisor

Kevin Chen, Candice Kim, Mihir Shah

Doctoral Dissertation Reader (AC)

Sam Bollinger, Celeste Diaz, Rachel Gleyzer, Nicole Horsley, Jane Lee

Postdoctoral Faculty Sponsor

Zihao Deng, Anna Jussila, Egor Sedov

Doctoral Dissertation Advisor (AC)

Franco Felix, Nick Guardino, Michelle Kinney, Samantha Trescott, Rachel Wyetzner

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Bioengineering (PhD Program)
- Biomedical Data Science (PhD Program)
- Cancer Biology (PhD Program)
- Dermatology (Fellowship Program)
- Genetics (PhD Program)
- Stem Cell Biology and Regenerative Medicine (PhD Program)

Publications

PUBLICATIONS

- **A spatiotemporal and machine-learning platform facilitates the manufacturing of hPSC-derived esophageal mucosa.** *Developmental cell*
  Yang, Y., McCullough, C. G., Seninge, L., Guo, L., Kwon, W. J., Zhang, Y., Li, N. Y., Gaddam, S., Pan, C., Zhen, H., Torkelson, J., Glass, I. A., Charville, et al
  2025
- **Basal-to-inflammatory transition and tumor resistance via crosstalk with a pro-inflammatory stromal niche.** *Nature communications*
  Li, N. Y., Zhang, W., Haensel, D., Jussila, A. R., Pan, C., Gaddam, S., Plevritis, S. K., Oro, A. E.
  2024; 15 (1): 8134
- **A scalable and cGMP-compatible autologous organotypic cell therapy for Dystrophic Epidermolysis Bullosa.** *Nature communications*
  Neumayer, G., Torkelson, J. L., Li, S., McCarthy, K., Zhen, H. H., Vangipuram, M., Mader, M. M., Gebeyehu, G., Jaouni, T. M., Jacków-Malinowska, J., Rami, A., Hansen, C., Guo, et al
  2024; 15 (1): 5834
- **The manatee variational autoencoder model for predicting gene expression alterations caused by transcription factor perturbations.** *Scientific reports*
  Yang, Y., Seninge, L., Wang, Z., Oro, A., Stuart, J. M., Ding, H.
  2024; 14 (1): 11794
- **Skin basal cell carcinomas assemble a pro-tumorigenic spatially organized and self-propagating Trem2+ myeloid niche.** *Nature communications*

Haensel, D., Daniel, B., Gaddam, S., Pan, C., Fabo, T., Bjelajac, J., Jussila, A. R., Gonzalez, F., Li, N. Y., Chen, Y., Hou, J., Patel, T., Aasi, et al
2023; 14 (1): 2685

- **GRHL2 and AP2a coordinate early surface ectoderm lineage commitment during development.** *iScience*
  Collier, A. E., Piekos, S. N., Liu, A., Pattison, J. M., Felix, F., Bailetti, A. A., Sedov, E., Gaddam, S., Zhen, H., Oro, A. E.
  2023; 26 (3): 106125

- **LY6D marks pre-existing resistant basosquamous tumor subpopulations.** *Nature communications*
  Haensel, D., Gaddam, S., Li, N. Y., Gonzalez, F., Patel, T., Cloutier, J. M., Sarin, K. Y., Tang, J. Y., Rieger, K. E., Aasi, S. Z., Oro, A. E.
  2022; 13 (1): 7520

- **Gibbin mesodermal regulation patterns epithelial development.** *Nature*
  Collier, A., Liu, A., Torkelson, J., Pattison, J., Gaddam, S., Zhen, H., Patel, T., McCarthy, K., Ghanim, H., Oro, A. E.
  2022

- **Biomedical Data Commons (BMDC) prioritizes B-lymphocyte non-coding genetic variants in Type 1 Diabetes.** *PLoS computational biology*
  Piekos, S. N., Gaddam, S., Bhardwaj, P., Radhakrishnan, P., Guha, R. V., Oro, A. E.
  2021; 17 (9): e1009382

- **c-FOS drives reversible basal to squamous cell carcinoma transition.** *Cell reports*
  Kuonen, F., Li, N. Y., Haensel, D., Patel, T., Gaddam, S., Yerly, L., Rieger, K., Aasi, S., Oro, A. E.
  2021; 37 (1): 109774

- **The Sky's the LEMit: New insights into nuclear structure regulation of transcription factor activity.** *Current opinion in cell biology*
  Mirza, A. N., Gonzalez, F., Ha, S. K., Oro, A. E.
  2020; 68: 173–80

- **AP-1 and TGFSS cooperativity drives non-canonical Hedgehog signaling in resistant basal cell carcinoma.** *Nature communications*
  Yao, C. D., Haensel, D., Gaddam, S., Patel, T., Atwood, S. X., Sarin, K. Y., Whitson, R. J., McKellar, S., Shankar, G., Aasi, S., Rieger, K., Oro, A. E.
  2020; 11 (1): 5079

- **TFAP2C-and p63-Dependent Networks Sequentially Rearrange Chromatin Landscapes to Drive Human Epidermal Lineage Commitment** *CELL STEM CELL*
  Li, L., Wang, Y., Torkelson, J. L., Shankar, G., Pattison, J. M., Zhen, H. H., Fang, F., Duren, Z., Xin, J., Gaddam, S., Melo, S. P., Piekos, S. N., Li, et al
  2019; 24 (2): 271-+

- **Loss of primary cilia drives switching from Hedgehog to Ras/MAPK pathway in resistant basal cell carcinoma.** *The Journal of investigative dermatology*
  Kuonen, F., Huskey, N. E., Shankar, G., Jaju, P., Whitson, R. J., Rieger, K. E., Atwood, S. X., Sarin, K. Y., Oro, A. E.
  2019

- **TFAP2C- and p63-Dependent Networks Sequentially Rearrange Chromatin Landscapes to Drive Human Epidermal Lineage Commitment.** *Cell stem cell*
  Li, L., Wang, Y., Torkelson, J. L., Shankar, G., Pattison, J. M., Zhen, H. H., Fang, F., Duren, Z., Xin, J., Gaddam, S., Melo, S. P., Piekos, S. N., Li, et al
  2019

- **LAP2 Proteins Chaperone GLI1 Movement between the Lamina and Chromatin to Regulate Transcription** *CELL*
  Mirza, A. N., McKellar, S. A., Urman, N. M., Brown, A. S., Hollmig, T., Aasi, S. Z., Oro, A. E.
  2019; 176 (1-2): 198-+

- **MTSS1/Src family kinase dysregulation underlies multiple inherited ataxias.** *Proceedings of the National Academy of Sciences of the United States of America*
  Brown, A. S., Meera, P., Altindag, B., Chopra, R., Perkins, E. M., Paul, S., Scoles, D. R., Tarapore, E., Magri, J., Huang, H., Jackson, M., Shakkottai, V. G., Otis, et al
  2018

- **Retinoic acid and BMP4 cooperate with p63 to alter chromatin dynamics during surface epithelial commitment** *NATURE GENETICS*
  Pattison, J. M., Melo, S. P., Piekos, S. N., Torkelson, J. L., Bashkirova, E., Mumbach, M. R., Rajasingh, C., Zhen, H., Li, L., Liaw, E., Alber, D., Rubin, A. J., Shankar, et al
  2018; 50 (12): 1658-+

- **LAP2 Proteins Chaperone GLI1 Movement between the Lamina and Chromatin to Regulate Transcription.** *Cell*
  Mirza, A. N., McKellar, S. A., Urman, N. M., Brown, A. S., Hollmig, T., Aasi, S. Z., Oro, A. E.
  2018

- **Retinoic acid and BMP4 cooperate with p63 to alter chromatin dynamics during surface epithelial commitment.** *Nature genetics*
  Pattison, J. M., Melo, S. P., Piekos, S. N., Torkelson, J. L., Bashkirova, E., Mumbach, M. R., Rajasingh, C., Zhen, H. H., Li, L., Liaw, E., Alber, D., Rubin, A. J., Shankar, et al
  2018

- **Frequent basal cell cancer development is a clinical marker for inherited cancer susceptibility** *JCI INSIGHT*
  Cho, H. G., Kuo, K. Y., Li, S., Bailey, I., Aasi, S., Chang, A. S., Oro, A. E., Tang, J. Y., Sarin, K. Y.
  2018; 3 (15)

- **Noncanonical hedgehog pathway activation through SRF-MKL1 promotes drug resistance in basal cell carcinomas.** *Nature medicine*
  Whitson, R. J., Lee, A. n., Urman, N. M., Mirza, A. n., Yao, C. Y., Brown, A. S., Li, J. R., Shankar, G. n., Fry, M. A., Atwood, S. X., Lee, E. Y., Hollmig, S. T., Aasi, et al
  2018; 24 (3): 271–81

- **Soil Primes the Seed: Epigenetic Landscape Drives Tumor Behavior.** *Cell stem cell*
  Whitson, R. J., Oro, A. E.
  2017; 20 (2): 149-150

- **Combined inhibition of atypical PKC and histone deacetylase 1 is cooperative in basal cell carcinoma treatment.** *JCI insight*
  Mirza, A. N., Fry, M. A., Urman, N. M., Atwood, S. X., Roffey, J. n., Ott, G. R., Chen, B. n., Lee, A. n., Brown, A. S., Aasi, S. Z., Hollmig, T. n., Ator, M. A., Dorsey, et al
  2017; 2 (21)

- **Safety and efficacy of the JAK inhibitor tofacitinib citrate in patients with alopecia areata.** *JCI insight*
  Kennedy Crispin, M., Ko, J. M., Craiglow, B. G., Li, S., Shankar, G., Urban, J. R., Chen, J. C., Cerise, J. E., Jabbari, A., Winge, M. C., Marinkovich, M. P., Christiano, A. M., Oro, et al
  2016; 1 (15)

- **Smoothened variants explain the majority of drug resistance in Basal cell carcinoma.** *Cancer cell*
  Atwood, S. X., Sarin, K. Y., Whitson, R. J., Li, J. R., Kim, G., Rezaee, M., Ally, M. S., Kim, J., Yao, C., Chang, A. L., Oro, A. E., Tang, J. Y.
  2015; 27 (3): 342-353

- **Human COL7A1-corrected induced pluripotent stem cells for the treatment of recessive dystrophic epidermolysis bullosa** *SCIENCE TRANSLATIONAL MEDICINE*
  Sebastiano, V., Zhen, H. H., Derafshi, B. H., Bashkirova, E., Melo, S. P., Wang, P., Leung, T. L., Siprashvili, Z., Tichy, A., Li, J., Ameen, M., Hawkins, J., Lee, et al
  2014; 6 (264)

- **Epigenetic targeting of Hedgehog pathway transcriptional output through BET bromodomain inhibition** *NATURE MEDICINE*
  Tang, Y., Gholamin, S., Schubert, S., Willardson, M. I., Lee, A., Bandopadhayay, P., Bergthold, G., Masoud, S., Nguyen, B., Vue, N., Balansay, B., Yu, F., Oh, et al
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- **Somatic Correction of Junctional Epidermolysis Bullosa by a Highly Recombinogenic AAV Variant.** *Molecular therapy : the journal of the American Society of Gene Therapy*
  Melo, S. P., Lisowski, L., Bashkirova, E., Zhen, H. H., Chu, K., Keene, D. R., Marinkovich, M. P., Kay, M. A., Oro, A. E.
  2014; 22 (4): 725-733

- **"Atypical" regulation of Hedgehog-dependent cancers.** *Cancer cell*
  Atwood, S. X., Oro, A. E.
  2014; 25 (2): 133-134

- **State-dependent signaling by Cav1.2 regulates hair follicle stem cell function.** *Genes & development*
  Yucel, G., Altindag, B., Gomez-Ospina, N., Rana, A., Panagiotakos, G., Lara, M. F., Dolmetsch, R., Oro, A. E.
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- **GLI activation by atypical protein kinase C ?/? regulates the growth of basal cell carcinomas.** *Nature*

Atwood, S. X., Li, M., Lee, A., Tang, J. Y., Oro, A. E.
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- **GLI activation by atypical protein kinase C iota/lambda regulates the growth of basal cell carcinomas** *NATURE*
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  2013; 494 (7438): 484-488

- **Hedgehog pathway inhibition and the race against tumor evolution** *JOURNAL OF CELL BIOLOGY*
  Atwood, S. X., Chang, A. L., Oro, A. E.
  2013: 45-49

- **Efficacy and Safety of Vismodegib in Advanced Basal-Cell Carcinoma** *NEW ENGLAND JOURNAL OF MEDICINE*
  Sekulic, A., Migden, M. R., Oro, A. E., Dirix, L., Lewis, K. D., Hainsworth, J. D., Solomon, J. A., Yoo, S., Arron, S. T., Friedlander, P. A., Marmur, E., Rudin, C. M., Chang, et al
  2012; 366 (23): 2171-2179

- **Translocation Affecting Sonic Hedgehog Genes in Basal-Cell Carcinoma** *NEW ENGLAND JOURNAL OF MEDICINE*
  Gomez-Ospina, N., Chang, A. L., Qu, K., Oro, A. E.
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  Woo, W., Zhen, H. H., Oro, A. E.
  2012; 26 (11): 1235-1246

- **Efficacy and safety of the hedgehog pathway inhibitor vismodegib in patients with advanced basal cell carcinoma (BCC): ERIVANCE BCC study update**
  Sekulic, A., Migden, M. R., Oro, A. E., Lewis, K. D., Hainsworth, J. D., Yoo, S., Dirix, L., Hou, J., Yue, H., Hauschild, A., ERIVANCE BCC Study Investigators
  AMER SOC CLINICAL ONCOLOGY.2012

- **SnapShot: Hair Follicle Stem Cells** *CELL*
  Woo, W., Oro, A. E.
  2011; 146 (2): 334-U159

- **MIM and Cortactin Antagonism Regulates Ciliogenesis and Hedgehog Signaling** *DEVELOPMENTAL CELL*
  Bershteyn, M., Atwood, S. X., Woo, W., Li, M., Oro, A. E.
  2010; 19 (2): 270-283

- **I-BAR protein antagonism of endocytosis mediates directional sensing during guided cell migration** *JOURNAL OF CELL BIOLOGY*
  Quinones, G. A., Jin, J., Oro, A. E.
  2010; 189 (2): 353-367

- **Functional genotype classification groups distinguish disease severity in recessive dystrophic epidermolysis bullosa.** *The British journal of dermatology*
  Pathmarajah, P., Eid, E., Nazaroff, J., So, J., Mittal, V., Harris, N., Li, S., Lucky, A. W., Gorell, E. S., Peoples, K. G., Pope, E., Lara-Corrales, I., Paller, et al
  2025

- **Clinical Practice Guidelines for the Management of Basal Cell Carcinoma in Gorlin Syndrome** *Journal of the American Academy of Dermatology*
  Cahn, B. A., et al
  2025; In press

- **Basal-to-inflammatory transition and tumor resistance via crosstalk with a proinflammatory stromal niche** *Nature Communications*
  Li, N. Y., Zhang, W., Haensel, D., Jussila, A., Pan, C., Gaddam, S., Plevritis, S., Oro, A.
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- **Acquisition of drug resistance in basal cell nevus syndrome tumors through basal to squamous cell carcinoma transition.** *bioRxiv : the preprint server for biology*
  Jussila, A. R., Haensel, D., Gaddam, S., Oro, A. E.
  2023

- **Integrated single-cell chromatin and transcriptomic analyses of human scalp identify gene-regulatory programs and critical cell types for hair and skin diseases.** *Nature genetics*
  Ober-Reynolds, B., Wang, C., Ko, J. M., Rios, E. J., Aasi, S. Z., Davis, M. M., Oro, A. E., Greenleaf, W. J.
  2023
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  Bartl, J., Zanini, M., Bernardi, F., Forget, A., Blumel, L., Talbot, J., Picard, D., Qin, N., Cancila, G., Gao, Q., Nath, S., Koumba, I. M., Wolter, et al
  2022; 13 (1): 4061
- **A conserved YAP/Notch/REST network controls the neuroendocrine cell fate in the lungs.** *Nature communications*
  Shue, Y. T., Drainas, A. P., Li, N. Y., Pearsall, S. M., Morgan, D., Sinnott-Armstrong, N., Hipkins, S. Q., Coles, G. L., Lim, J. S., Oro, A. E., Simpson, K. L., Dive, C., Sage, et al
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- **Is hypoimmunogenic stem cell therapy safe in times of pandemics?** *Stem cell reports*
  Matheus, F., Raveh, T., Oro, A. E., Wernig, M., Drukker, M.
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- **Phase II Open-Label, Single-Arm Trial to Investigate the Efficacy and Safety of Topical Remetinostat Gel in Patients with Basal Cell Carcinoma.** *Clinical cancer research : an official journal of the American Association for Cancer Research*
  Kilgour, J. M., Shah, A., Urman, N. M., Eichstadt, S., Do, H. N., Bailey, I., Mirza, A., Li, S., Oro, A. E., Aasi, S. Z., Sarin, K. Y.
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- **C-FOS drives reversible basal to squamous cell carcinoma transition**
  Kuonen, F., Li, N., Haensel, D., Patel, T., Gaddam, S., Yerly, L., Rieger, K., Aasi, S., Oro, A.
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  Haensel, D., Oro, A. E.
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- **Receptor protein tyrosine phosphatases control Purkinje neuron firing.** *Cell cycle (Georgetown, Tex.)*
  Brown, A. S., Meera, P., Quinones, G., Magri, J., Otis, T. S., Pulst, S. M., Oro, A. E.
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- **Loss of Primary Cilia Drives Switching from Hedgehog to Ras/MAPK Pathway in Resistant Basal Cell Carcinoma** *JOURNAL OF INVESTIGATIVE DERMATOLOGY*
  Kuonen, F., Huskey, N. E., Shankar, G., Jaju, P., Whitson, R. J., Rieger, K. E., Atwood, S. X., Sarin, K. Y., Oro, A. E.
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- **Genetic Mutations Underlying Phenotypic Plasticity in Basosquamous Carcinoma** *Journal of INVESTIGATIVE DERMATOLOGY | Original Article | Carcinogenesis/Tumorigenesis*
  Chiang, A., Tan, C. Z., Kuonen, F., Hodgkinson, L. M., Chiang, F., Cho, R. J., South, A. P., Tang, J. Y., Chang, A. S., Rieger, K. E., Oro, A. E., Sarin, K. Y.
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- **MTSS1/Src family kinase dysregulation underlies multiple inherited ataxias** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Brown, A. S., Meera, P., Altindag, B., Chopra, R., Perkins, E. M., Paul, S., Scoles, D. R., Tarapore, E., Magri, J., Huang, H., Jackson, M., Shakkottai, V. G., Otis, et al
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- **TGF beta, Fibronectin and Integrin alpha 5 beta 1 Promote Invasion in Basal Cell Carcinoma** *JOURNAL OF INVESTIGATIVE DERMATOLOGY*
  Kuonen, F., Surbeck, I., Sarin, K. Y., Dontenwill, M., Ruegg, C., Gilliet, M., Oro, A. E., Gaide, O.
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- **Actin polymerization controls cilia-mediated signaling** *JOURNAL OF CELL BIOLOGY*
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  Kuonen, F., Surbeck, I., Sarin, K. Y., Dontenwill, M., Ruegg, C., Gilliet, M., Oro, A. E., Gaide, O.
  2018

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  Roffey, J., Dillon, C., Oro, A. E., Mirza, A. N., Sarin, K. Y., Aasi, S. Z., Parker, P. J., Riou, P., Barton, C., Patel, B., Turnbull, A., Stanway, E., Fowler, et al
  AMER ASSOC CANCER RESEARCH.2018

- **Tumor-Derived Suppressor of Fused Mutations Reveal Hedgehog Pathway Interactions** *PLOS ONE*
  Urman, N. M., Mirza, A., Atwood, S. X., Whitson, R. J., Sarin, K. Y., Tang, J. Y., Oro, A. E.
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  Crispin, M., Ko, J. M., Craiglow, B. G., Li, S., Shankar, G., Urban, J. R., Chen, J. C., Cerise, J. E., Jabbari, A., Winge, M. C. G., Marinkovich, M., Christiano, A. M., Oro, et al
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- **Factors That May Promote an Effective Local Research Environment** *JOURNAL OF INVESTIGATIVE DERMATOLOGY*
  Wang, K., Lee, C. S., Marinkovich, M., Chang, H. Y., Oro, A. E., Khavari, P. A.
  2016; 136 (8): 1529–31

- **Update to an open-label clinical trial of vismodegib as neoadjuvant before surgery for high-risk basal cell carcinoma (BCC)** *JOURNAL OF THE AMERICAN ACADEMY OF DERMATOLOGY*
  Kwon, G. P., Ally, M., Bailey-Healy, I., Oro, A. E., Kim, J., Chang, A., Aasi, S., Tang, J. Y.
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- **Effects of Combined Treatment With Arsenic Trioxide and Itraconazole in Patients With Refractory Metastatic Basal Cell Carcinoma.** *JAMA dermatology*
  Ally, M. S., Ransohoff, K., Sarin, K., Atwood, S. X., Rezaee, M., Bailey-Healy, I., Kim, J., Beachy, P. A., Chang, A. L., Oro, A., Tang, J. Y., Colevas, A. D.
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