KELLEN J. CAVAGNERO PhD

Immunologist | Experimental & Computational Biologist | Translational Scientist
kcavagnero@gmail.com | San Diego, CA

SUMMARY:

Immunologist with 10+ years of experimental and computational biomedical research experience spanning preclinical mouse models, cell culture, and clinical trials. Expert in inflammation; bulk, single-cell, and spatial 'omics; biomarker discovery; and therapeutic target validation. Personally secured over $400K of competitive grant funding (NSF, NIH, Hartwell Foundation). Author of 25+ peer-reviewed publications (7 first-author, 2 senior/corresponding-author) in journals including the *Journal of Experimental Medicine*, *Science Immunology*, and *Science Translational Medicin*e. Communicated findings via invited speaking engagements at 15+ local, national, and international scientific meetings. Mentored 15+ trainees at undergraduate, graduate, and post-graduate levels.

EDUCATION/TRAINING:

University of California, San Diego — 2024 – Present
Postdoctoral Fellowship

University of California, San Diego — 2019 – 2024
Doctor of Philosophy, Biomedical Sciences

University of California, San Diego — 2015 – 2019
Post-Baccalaureate Research

University of California, Santa Barbara — 2010 – 2014
Bachelor of Science, Pharmacology

CORE SKILLS:

- **Experimental:** Barrier tissue infection and inflammatory disease mouse models, clinical trials, cell culture, *in vivo* and *in vitro* genetic perturbation, flow cytometry, microscopy, immunoprecipitation, western blot, ELISA, qPCR.
- **Computational:** Transcriptomics (bulk, single-cell, spatial), epigenomics (ATAC, ChIP), microbiome sequencing (16S, shotgun metagenomics), multi-'omic integration, and machine-learning. Language proficiencies include R, python, and bash.
- **Leadership/Communication:** Science communication (scientific & lay audiences), large-scale multi-investigator collaborations, supervision/mentorship, and lab management.

SELECT PUBLICATIONS:

- Galati A,..., **Cavagnero KJ**. *Multifaceted roles of dermal fibroblasts in skin health and disease*. **Dermatol Surg**. 2025.
- **Cavagnero KJ**,..., Gallo RL. *Targeting fibroblast TNF receptor 1 attenuates type 17 skin inflammation*. **Cell Reports**. 2025
- **Cavagnero KJ**,..., Gallo RL. *Positionally distinct interferon stimulated dermal immune acting fibroblasts promote neutrophil recruitment in Sweet's syndrome*. **J Allergy Clin Immunol**. 2025.
- **Cavagnero KJ**,..., Gallo RL. *CXCL12+ dermal adipocyte lineage fibroblast subsets drive neutrophil recruitment and host defense through recognition of IL-17*. **J Exp Med**. 2024. ***Featured on the journal cover***.
- Marotz C*, **Cavagnero KJ***,..., Knight R. *Evaluation of the effect of storage methods on fecal, saliva, and skin microbiome composition*. **mSystems**. 2021. ****Authors contributed equally to this work***.
- **Cavagnero KJ**,..., Doherty T. *Unconventional ST2- and CD127-negative lung ILC2 populations are induced by the fungal allergen Alternaria.* **J Allergy Clin Immunol**. 2019.

PROFESSIONAL EXPERIENCE:

Postdoctoral Fellow, UC San Diego. La Jolla, CA. — 2024 – Present

- Studies mechanisms of barrier tissue infection and inflammatory disease using human samples, mouse models, cell culture, transcriptomics, and epigenomics.
- Initiated and led a large-scale multi-investigator project to define the pathogenesis of human neutrophilic dermatoses using multi-'omics.
- Identified type I interferon signaling as a novel therapeutic target for treating Sweet's syndrome.
- Discovered that targeting fibroblast TNF receptor 1 attenuates type 17 skin inflammation.

Graduate Student Researcher, UC San Diego. La Jolla, CA. — 2019 – 2024

- Studied mechanisms of barrier tissue infection and inflammatory disease using human samples, mouse models, cell culture, transcriptomics, and microbiome sequencing.
- Characterized the cell communication network underlying skin immunity using unbiased machine-learning approaches, revealing previously unrecognized dermal immune-acting fibroblasts that are critical for defense against *S. aureus* and psoriasis pathogenesis.
- Spearheaded a computational project that systematically evaluated the effect of sample storage on microbiome composition, identifying optimal preservation methods.

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PROFESSIONAL EXPERIENCE (CONTINUED):

Staff Research Associate I-III & Lab Manager, Doherty Lab, UC San Diego. La Jolla, CA. 2015 – 2019

- Studied mechanisms of allergic disease, with a focus on group 2 innate lymphoid cells (ILC2s), using human samples, mouse models, and high parameter flow cytometry.
- Conceived of studies, designed and performed experiments, analyzed data and generated figures, wrote and peer reviewed manuscripts, communicated findings through oral presentations at local and national meetings.
- Discovered unconventional ILC2 subsets, platelet-ILC2 interactions crucial for functional responses, and microbe-induced ILC2 suppression.
- Oversaw a team that included a staff research associate, two master's students, and four undergraduate students.
- Responsible for outfitting new lab space, IACUC protocol, animal colony, EH&S documentation.

FELLOWSHIPS:

Hartwell Foundation Postdoctoral Fellowship ($50,000/year) 2024 – Present
UCSD CARING NIH T32 Postdoctoral Fellowship (AI007036) ($61,000/year) 2024 – Present
National Science Foundation Graduate Research Fellowship (2038238) ($53,000/year) 2021 – 2024
UCSD Gastroenterology NIH T32 Predoctoral Fellowship (DK007202) ($28,000/year) 2020 – 2021

AWARDS & HONORS:

Travel Award, Society for Investigative Dermatology Annual Meeting ($400) 2025
Thesis of the Year Award, UCSD BMS ($1,000) 2024
Travel Award, UCSD BMS ($400) 2024
ARCS Foundation Scholarship ($10,000/year) 2022 – 2024
Travel Award, Society for Investigative Dermatology Annual Meeting ($400) 2024
Regulation of Barrier Immunity Keystone Scholarship ($1,200) 2024
AAI Outstanding Presentation Award, La Jolla Immunology Conference ($200) 2023
Outstanding Presentation Award, UCSD BMS Retreat ($200) 2023
Travel Award, International Society for Investigative Dermatology Quadrennial Meeting ($2,000) 2023
Outreach Award, National Cancer Institute ($1,000) 2022
Travel Award, Society for Investigative Dermatology Annual Meeting ($800) 2022
Future Leaders Retreat Invitation, Society for Investigative Dermatology 2022
Travel Award, American Academy for Allergy, Asthma, and Immunology Annual Meeting ($1,200) 2023
Honorarium, American Academy for Allergy, Asthma, and Immunology Annual Meeting ($1,000) 2023

SELECT SPEAKING ENGAGMENTS:

- *IL-17 elicits skin inflammation by acting on different cell types depending on disease context*. SID (2025). 10min.
- *Transcriptomics of neutrophilic dermatoses identifies IFN signal in fibroblasts from Sweet's syndrome*. SID (2024). 10min.
- *Immune acting fibroblasts: key players in skin inflammation and host defense*. Keystone (2024). 15min.
- *Dermal fibroblasts drive neutrophil recruitment to the skin*. ISID (2023). 12min.
- Honorarium: *STING agonist cyclic di-GMP suppresses ILC2s in type 2 lung inflammation*. AAAAI (2023). 25min.
- Plenary: *Immune fibroblastic cell (IFC)-neutrophil communication during bacterial infection*. SID (2022). 15min.
- *CDG induces STING-dependent ILC2 to ILC1 shift during innate type 2 lung inflammation*. AAAAI (2021). 5min.
- *Unconventional ST2- and CD127-negative lung ILC2 populations are induced by Alternaria*. AAAAI (2019). 5min.

ADDITIONAL VOLUNTEER, OUTREACH, & LEADERSHIP EXPERIENCE:

Host and Creator, Science Podcast "*Inflammatory Content*". 2019 – Present

- NIH-sponsored, featured in *Nature*, available on Apple Podcast, Spotify, YouTube.
- 25+ episodes with guests including Professors Mitchell Kronenberg, Victor Nizet, Richard Gallo, Miguel Reina Campos, Dequina Nichols, Shiri Gur Cohen, Amir Zarrinpar, Richard Daneman, David Gonzales

Head Graduate Instructional Apprentice, UC San Diego BIMM124 Medical Microbiology 2022

- Presented guest lectures to 150+ student class; supervised 2 Graduate Instructional Apprentices Gave; led 30+ student discussion sections; wrote proctored, and graded exams.

President, UC San Diego Biomedical Sciences Graduate Program. La Jolla, CA. 2022 – 2023

- Oversaw 150+ student graduate program and $18,000 budget

Peer Reviewer 2015 – Present

- Reviewed 30+ articles for journals including *Sci Transl Med, J Allergy Clin Immunol, Nat Commun, Cell Mol Immunol, JCI Insight, J Immunol, J Cell Mol Med*