Jonathan K. Sakkos, Ph.D.

Staff Engineer, Spatial Genomics R&D

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I turn biology into products by building the instruments, software, and processes in between. Ph.D. mechanical engineer with more than ten years across biotech R&D and manufacturing, from automated instruments and computer vision to scale-up and design transfer.

Experience

Staff Engineer, Spatial Genomics R&D · Takara Bio USA, Inc. Jan 2025 – present

- Designed and validated a next-generation automated indexing instrument with multi-fold capacity per station, then qualified it and transferred it to operations.
- Replaced a legacy MATLAB image-analysis pipeline with a validated Python and computer-vision system that runs several times faster, now in production with automated reporting.
- Engineered the tissue-alignment fixture behind the Trekker® FX FFPE kit, winner of The Scientist's 2026 Top Innovations award.
- Built automated QC and imaging-setup tools that let manufacturing run without R&D intervention.

Senior Process Engineer II · Curio Bioscience Jan 2024 – Jan 2025

- Started the automation and indexing scale-up program that became the next-generation production platform.
- Built automated QC and process-automation tools that reduced manual intervention.

Senior Process Development Engineer · Curio Bioscience Oct 2022 – Dec 2023

- Developed and scaled manufacturing processes through the commercial launch of Seeker® and Trekker®.
- Designed custom fixtures with CAD and 3D printing to speed up R&D cycles.

Postdoctoral Research Associate · Michigan State University Sep 2018 – Sep 2022

- Developed genetic tools for engineering photosynthetic microbes, including an orthogonal protein-degradation system and quorum-sensing circuits.
- Combined experiments with agent-based modeling (NUFEB) and neural-network surrogate models to study light-driven microbial communities.
- Applied automated microscopy and deep learning to quantify cellular structures, with collaborators at Oak Ridge National Laboratory.

Graduate Research Assistant · University of Minnesota Aug 2012 – Sep 2018

- Designed, synthesized, and characterized porous sol-gel silica materials for encapsulating bacteria.
- Authored 7 peer-reviewed papers and filed 3 patent applications.

Product Engineer · Columbia Steel Casting Co. May 2007 – Aug 2012

- Modeled parts and assemblies in SolidWorks and produced drawings in AutoCAD.

Education

Ph.D., Mechanical Engineering · University of Minnesota 2018
Thesis: Engineering Biocatalytic Materials: Encapsulation Systems for Biotechnology

B.S., Mechanical Engineering · University of Portland 2009

Strengths

- **Instruments & automation:** I design and build the machines that make a delicate process repeatable.
- **Imaging, data & software:** I turn images and data into decisions, automatically.
- **Scale-up & design transfer:** I take R&D workflows through validation into manufacturing and launch.
- **Scientific depth:** I speak the scientists' language, so the engineering fits the biology.

Publications and patents

15 peer-reviewed papers and 3 patent applications. Full list at jonathanksakkos.com/publications.