Martin Kolnik

Ph.D.

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Solution-focused bioengineer seeking to drive innovation for advancing human health.

Education

2005–2012 **Ph.D. Bioengineering**, *University of California San Diego*, La Jolla, CA.

2002–2005 **B.S. Bioengineering**, *Rice University*, Houston, TX.

Professional and Research Experience

2018–present **Sr. Applications Development Scientist**, *Miltenyi Biotec Inc.*, San Diego, CA.

- Lead developer for CliniMACS Prodigy® Customized Application (CAP) service translating clients' manual cell handling into tailor-made, automated processes for CAR-T cell, HSC, NK and other cell therapy applications
- Responsible for managing client projects from initial kickoff meeting to user requirements gathering, drafting functional specifications, programming, testing, deployment, maintenance and support of the custom software
- Spearheaded development of microfluidic cell sorter (Tyto®) application for clinical-scale regulatory T-cell isolation after Prodigy® enrichment
- Lead developer for customized software add-on tools (Express Modes) for automated flow cytometry gating and analysis on MACSQuant® cell analyzers for in-process control and QC applications

2015–2018 **Applications Scientist**, *Miltenyi Biotec Inc.*, San Diego, CA.

- Technical expert supporting customer applications in magnetic cell-sorting, flow cytometry analysis, sample preparation and cell culture
- Lead support specialist for microfluidic cell sorter (Tyto®).
- Automation specialist for integration of TECAN liquid handling system with MACS technology

2010–2015 **Co-founder and Project Lead**, *Quantitative Biosciences Inc.*, San Diego, CA.

- Designed and executed the launch of a $1.5M microalgae-based wastewater treatment facility that achieved a tenfold increase in water quality with minimal energy requirements compared to industry-standard aeration systems.
- Liaised with regulators and oversight agencies to ensure adherence to regulatory guidelines to keep project on track and on schedule
- Exceeded expectations along budgetary and timeline constraints while overseeing the entire deployment — from inception to completion — including the supervision of contractors, procurement of materials/equipment, and intensive hands-on participation.

2005–2012 **Graduate Student Researcher**, *University of California San Diego*, La Jolla, CA.

- Developed a novel microfluidic cell-culture platform for real-time dynamic stimulation of mammalian cells and applied the device to uncover novel single-cell dynamics of NFκB translocation in response to different modes of TNFα stimulation
- Applied synthetic biology techniques to design and construct engineered cell lines for oscillatory production of fluorescent reporter protein to explore the dynamics of auto-regulated transcriptional feedback.

Technical Skills

Microfluidics and instrumentation.

- Flow cytometry expert for cell analysis and fluorescence activated microfluidic cell sorting
- Fluent in Autodesk Fusion 360 and AutoCAD design
- COMSOL finite element modeling of fluid dynamics
- Class 100 Cleanroom (UCSD Nano3) hands-on experience in microfabrication
- Rapid prototyping by 3D-Printing (SLA/FDM)
- Microfluidic device integration with external manifolds and conventional pumps (syringe, peristaltic, pneumatic)
- Automated fluorescence microscopy for high-content live-cell imaging

Data analysis and programming.

- Agile software development using JIRA, Confluence, Git, Bitbucket, Docker
- Flow cytometry data analysis (Python, R) for applications in immunophenotyping, rare cell enumeration (CD34, MSCs), CAR-T cell manufacturing
- Liquid handling robot automation (C#, Visual Basic, Tecan EVOware)
- Fluorescence microscopy image processing (MATLAB, ImageJ)

Cell processing.

- Expert on CliniMACS Prodigy platform for clinical-scale cell-processing operations including washing, magnetic separation, viral transduction, electroporation, activation/expansion, final formulation and integration with external culture reactors (Grex, Terumo Quantum, Wave/Xuri bioreactor)
- Magnetic cell isolation from whole blood, PBMC, and Leukapheresis using MACS® superparamagnetic nanoparticle technology
- Transfection, electroporation, viral transduction of mammalian cell lines
- Cell culture, molecular cloning, synthetic biology

Publications

Fortunato Ferrara, **Martin, Kolnik**, Sara D'Angelo, Frank M Erasmus, Daniela Vorholt, and Andrew RM Bradbury. Rapid purification of billions of circulating CD19+ B cells directly from leukophoresis samples. *New Biotechnology*, 2018.

Martin, Kolnik, Lev S. Tsimring, and Jeff Hasty. Vacuum-assisted cell loading enables shear-free mammalian microfluidic culture. *Lab on a Chip*, 12(22):4732–4737, October 2012.

Andreas Till, Rintaro Saito, Daria Merkurjev, Jing-Jing Liu, Gulam Hussain Syed, **Martin, Kolnik**, Aleem Siddiqui, Martin Glas, Björn Scheffler, Trey Ideker, and Suresh Subramani. Evolutionary trends and functional anatomy of the human expanded autophagy network. *Autophagy*, 11(9):1652–1667, September 2015.

Natalie Cookson, Scott Cookson, Michael Ferry, and **Martin, Kolnik**. Microalgae Facility for Integrated Treatment of Dairy Wastewater. *California Energy Commission*, CEC-500-2015-068.

Personal attributes

- Accepts and welcomes criticism
- Conscientious and delivers on promises
- Reliable team member
- Communicates effectively with stakeholders
- Highly adaptable to changing circumstances
- Bilingual, Dual citizenship: USA, EU