KERIM B. KAYLAN
M.D./Ph.D. candidate | Department of Bioengineering | Medical Scholars Program
University of Illinois at Urbana–Champaign
3234 Digital Computer Lab, M/C-278, 1304 W. Springfield Ave., Urbana, IL 61801, USA
+1 269 861 3750 | kaylan2@illinois.edu | http://www.kbkaylan.net

EDUCATION

University of Illinois at Chicago, Chicago, IL
M.D. candidate, College of Medicine 8/2012–5/2021

University of Illinois at Urbana–Champaign, Urbana, IL
Ph.D. candidate, Department of Bioengineering 8/2012–7/2017
M.S., Bioengineering 5/2016
- Thesis: Engineered Microenvironments for Studying Liver Progenitor Differentiation
- Advisor: Prof. Gregory H. Underhill

University of Michigan, Ann Arbor, MI
B.S.E., Biomedical Engineering, *magna cum laude* 4/2012

PROFESSIONAL EXPERIENCE

University of Illinois at Urbana–Champaign, Urbana, IL
Research Assistant, Department of Bioengineering 8/2012–7/2017
Advisor: Prof. Gregory H. Underhill

Genentech, Inc., South San Francisco, CA
Co-op, Biological Technologies 6/2011–12/2011
Manager: Dr. Guoying Jiang

NeuroNexus, Inc., Ann Arbor, MI
Student Engineer 9/2010–5/2011
Managers: Drs. John Seymour and Gregory Gage

University of Michigan, Ann Arbor, MI
Research Assistant, Department of Biomedical Engineering 9/2009–5/2011
Advisors: Prof. Shuichi Takayama, Dr. Hossein Tavana

AWARDS AND HONORS

University of Illinois at Urbana–Champaign, Urbana, IL
- Teacher Ranked as Excellent 3/2017
  Outstanding ratings; top 10% of TAs as ranked by their students
- Medical SIG Matching Grant Program 11/2016
  Intersociety Council for Pathology Information, $500
- I-Corps, Site Cohort 11 1/2016
  National Science Foundation, $2,000
- Medical SIG Matching Grant Program 9/2015
  Intersociety Council for Pathology Information, $750
- O'Morchoe Leadership Fellowship 8/2014
  University of Illinois College of Medicine, $1,500

University of Michigan, Ann Arbor, MI
- Summer Biomedical and Life Sciences Fellowship 5/2010
  University of Michigan UROP, $4,000
- Dean's List (×3) 12/2009–4/2012

- University Honors (×4) 12/2009–4/2012
- Michigan Promise Scholarship 9/2008
  State of Michigan, $1,000
- Michigan Competitive Scholarship 9/2008
  State of Michigan, $1,300

Publications

Asterisk (*) indicates authors who contributed equally to the work

1. **Kaylan KB**, Kourouklis AP, Underhill GU. "High-throughput cell microarray platform for correlative analysis of cell differentiation and traction forces." *J. Vis. Exp.* 2017; 121: e55362. DOI: 10.3791/55362.
2. **Kaylan KB**, Gentile SD, Milling LE, Bhinge KN, Kosari F, Underhill GU. "Mapping tumor cell drug responses as a function of matrix context and genotype using combinatorial cell microarrays." *Integr. Biol.* 2016; 8(12): 1221–1231. DOI: 10.1039/C6IB00179C.
3. Kourouklis AP*, **Kaylan KB***, Underhill GU. "Substrate stiffness and matrix composition coordinately control the differentiation of liver progenitor cells." *Biomaterials.* 2016; 99: 82–94. DOI: 10.1016/j.biomaterials.2016.05.016.
4. **Kaylan KB***, Ermilova V*, Yada RC, Underhill GU. "Combinatorial microenvironmental regulation of liver progenitor differentiation by Notch ligands, TGFβ, and extracellular matrix." *Sci. Rep.* 2016; 6(23490). DOI: 10.1038/srep23490.
5. Atefi A, Fyffe D, **Kaylan KB**, Tavana H. "Characterization of aqueous two-phase systems from volume and density measurements." *J. Chem. Eng. Data.* 2016; 61(4): 1531–1539. DOI: 10.1021/acs.jced.5b00901.
6. **Kaylan KB**, Underhill GH. "Hydrogels for hepatic tissue engineering" in *Gels Handbook: Fundamentals, Properties and Applications, Volume 2: Applications of Hydrogels in Regenerative Medicine*, eds. Abidian MR, Gurkan U, Edalat F. 2016. Hackensack, NJ: World Scientific Publishing. DOI: 10.1142/9789813140394_0015.
7. Tavana H, **Kaylan K**, Bersano-Begey T, Luker KE, Luker GD and Takayama S. "Rehydration of polymeric, aqueous, biphasic system facilitates high throughput cell exclusion patterning for cell migration studies." *Adv. Funct. Mater.* 2011; 21(15): 2920–2926. DOI: 10.1002/adfm.201002559. (Highlighted as frontispiece; DOI: 10.1002/adfm.201190062.)

Conference Activity

Oral Presentations

1. **Kaylan KB**, Gentile SD, Milling LE, Bhinge KN, Kosari F, Underhill GU. "Mapping Tumor Cell Drug Response as a Function of Matrix Context Using Combinatorial Cell Microarrays." Biomedical Engineering Society Annual Meeting, Minneapolis, MN. 6 Oct 2016.
2. **Kaylan KB**. "Combinatorial microenvironmental regulation of liver progenitor differentiation by Notch ligands, TGFβ, and extracellular matrix." Seminar. oSTEM Minority Research Symposium, Urbana, IL. 28 Apr 2016.
3. **Kaylan KB**, Ermilova V, Yada RC, Underhill GH. "Cellular microarrays reveal combinatorial effects of Notch ligands, TGFβ, and extracellular matrix on liver progenitor differentiation." Technical presentation. American Society of Mechanical Engineers NanoEngineering for Medicine and Biology Conference, Houston, TX. 23 Feb 2016.
4. **Kaylan KB**. "Combinatorial microenvironmental regulation of liver progenitor differentiation by Notch ligands, TGFβ, and extracellular matrix." Seminar. Bioengineering Graduate Student Seminar Series, Urbana, IL. 28 Sep 2015.

Poster Presentations

1. **Kaylan KB**, Gentile SD, Milling LE, Bhinge KN, Kosari F, Underhill GH. "Combinatorial cell microarrays for analyzing ECM regulation of tumor cell drug response." Poster. Medical Scholars Program Retreat, Monticello, IL. 23 Aug 2015.

2. **Kaylan KB**, Gentile SD, Milling LE, Bhinge KN, Kosari F, Underhill GH. "Combinatorial cell microarrays for analyzing ECM regulation of tumor cell drug response." Poster. American Physician Scientists Association Annual Meeting, Chicago, IL. Apr 25 2015.
3. **Kaylan KB**, Gentile SD, Milling LE, Bhinge KN, Kosari F, Underhill GH. "Combinatorial cell microarrays for analyzing ECM regulation of tumor cell drug response." Poster. College of Medicine Research Day, Urbana, IL. Apr 16 2015.
4. **Kaylan K**, Ermilova V, Underhill G. "Arrayed microenvironments for probing liver progenitor cell fate decisions." Poster. Biomedical Engineering Society Meeting, San Antonio, TX. Oct 25 2014.
5. **Kaylan K**, Ermilova V, Underhill G. "Deconstructing combinatorial microenvironmental regulation in hepatoblastoma using cell microarrays." Poster. Graduate Cancer Community Fall Symposium, Urbana, IL. 16 Sep 2014.
6. **Kaylan K**, Ermilova V, Underhill G. "Deconstructing combinatorial microenvironmental regulation in hepatoblastoma using cell microarrays." Poster. Medical Scholars Program Retreat, Monticello, IL. 23 Aug 2014.
7. **Kaylan K**, Ermilova V, Underhill G. "Deconstructing combinatorial microenvironmental regulation in hepatoblastoma using cell microarrays." Poster. College of Medicine Research Day, Urbana, IL. 17 Apr 2014.
8. **Kaylan K**, Ermilova V, Underhill G. "Deconstructing combinatorial microenvironmental regulation in hepatoblastoma using cell microarrays." Poster. Bioengineering Days, Urbana, IL. 21 Feb 2014.
9. **Kaylan K**, Lesaca I, Jiang G, Gazzano-Santoro H. "Development of a functional assay for MAb1 utilizing peptide uptake." Poster. Genentech Analytical Development and Quality Control Poster Mixer, South San Francisco, CA. 3 Oct 2011.
10. **Kaylan K**, Lesaca I, Jiang G, Gazzano-Santoro, H. "Development of a functional assay for MAb1." Poster. Genentech Intern Poster Day, South San Francisco, CA. 11 Aug 2011.
11. **Kaylan K**, Tavana H, Takayama S. "A novel cell migration assay utilizing polymeric aqueous two-phase systems." Poster. Student Biomedical Research Forum, Ann Arbor, MI. 4 Nov 2010.

Teaching and Mentoring

University of Illinois at Urbana–Champaign, Urbana, IL

- **Teaching Assistant**, Cell and Tissue Biology, College of Medicine 8/2016–5/2017
  Primary instructors: Profs. Benjamin D. Williams and Rex A. Hess
- **Facilitator**, Discover Bioengineering, WYSE 7/2016
  Primary instructor: Prof. Gregory H. Underhill
- **Teaching Assistant**, Cell and Tissue Biology, College of Medicine 1/2016–5/2016
  Primary instructors: Profs. Benjamin D. Williams and Rex A. Hess
- **Mentor**, BIOE 120, Introduction to Bioengineering 9/2015–12/2015
  Primary instructor: Mark C. Gryka
- **Facilitator**, Discover Bioengineering, WYSE 7/2015
  Primary instructors: Profs. Gregory H. Underhill and Prof. Jennifer Amos
- **Guest Lecturer**, BIOE 598 SAM, Quantitative Biotechnology 2/2014
  Primary instructor: Prof. Sua Myong
- **Grader**, BIOE 498/598 GU, Stem Cell Bioengineering 1/2014–5/2014
  Primary instructor: Prof. Gregory H. Underhill
- **Organizer and lecturer**, Agora Week: Bioengineering the Future 12/2012–2/2013
  University Lab High School
- **Mentor**, Tissue Development and Engineering Laboratory 8/2012–7/2017
  1. Ravi Chandra Yada (2012–2015)
  2. Lauren Milling (2012–2015)
  3. Alexander Loiben (2013–2014)
  4. Aneysha Bhat (2013–2014)
  5. David Kukla (2014–2015)

6. Megan Griebel (2014–2016)
7. Erik Anderson (2014–2016)
8. Benjamin Streeter (2014–2016)
9. Nicholas Cornell (2014–2017)
10. Divya Joshi (2015)
11. Anna Whelan (2015–2016)
12. Lauren Sargeant (2015–2017)
13. Sameed Jamil (2015–2017)
14. Ravi Malpani (2015–2016)
15. Ashley Dettlaff (2016)
16. M. Elizabeth Rhode (2016)

University of Michigan, Ann Arbor, MI

- **Teaching Assistant**, BIOMEDE 418-001, Quantitative Cell Biology 1/2012–4/2012
  Primary instructor: Prof. Shuichi Takayama
- **Peer Mentor**, Engineering Advising Center 8/2010–5/2011

University Service Activities

University of Illinois at Urbana–Champaign, Urbana, IL

- Medical Scholars Program Steering Committee 4/2017
- College of Medicine Selection Committee 3/2017
  Teaching Excellence and Innovation in Education awards
- Pathology Interest Group, *Organizer* 9/2015–7/2017
- Out in Medicine, *Co-Chair* 5/2014–7/2017
- Graduate Cancer Community @ Illinois, *Project Organizer* 8/2013–5/2016
- Climate Survey Steering Committee 11/2012–12/2012
- Medical Scholars Program Retreat Committee 9/2012–8/2014
  Program Subcommitttee 9/2012–8/2014
  Co-Chair 9/2013-8/2014
- Engineering Graduate Student Advisory Committee 9/2012–8/2013
  Secretary and Seminars Subcommittee Member
- Medical Scholars Program Advisory Committee 8/2012–7/2017
  Secretary 8/2012–7/2017
  Entering Class Representative 8/2012–8/2013
  Class I Representative 8/2013–8/2015
  Class II Representative 8/2015–7/2017
  Co-Chair 9/2016–7/2017

University of Michigan, Ann Arbor, MI

- Biomedical Engineering Society 9/2010–5/2011
  Executive Board Member and Webmaster

Professional Affiliations

- Tau Beta Pi—The Engineering Honor Society 2014-Present
- Biomedical Engineering Society 2014–Present
- American Physician Scientists Association 2013–Present

Technical Skills

Software
OS: OS X, Windows, GNU/Linux (Ubuntu, Red Hat)
Programming languages: R, MATLAB, LaTeX, C++, Markdown, HTML, CSS
Applications: RStudio, NIH ImageJ (Fiji), CellProfiler, GIMP, Inkscape, LabVIEW, SolidWorks

Wet laboratory
Cell biology: cell culture, traction force microscopy, viral transduction, cell migration assays
Molecular biology: immunoblotting, immunocytochemistry and immunofluorescence, *in situ* hybridization, qRT-PCR, ELISA, biolayer interferometry
Imaging: phase contrast, fluorescence, and confocal microscopy
Materials and fabrication: protein microarraying, hydrogel fabrication (PDMS, PA)
Automation: automated microscopy, robotic liquid handling

Analytical
Statistics: basic hypothesis testing, single and multiple linear regression, ANOVA, clustering analysis
Image analysis: automated high-throughput image cytometry (ImageJ, CellProfiler)

Publicity

- Microenvironmental regulation of liver development
    - Department of Bioengineering, University of Illinois at Urbana–Champaign. *Growth Factors*, July 2016. "Underhill working to decipher microenvironments of liver." Retrieved from http://bioengineering.illinois.edu/news/underhill-working-decipher-liver.
- Graduate Cancer Community @ Illinois
    - Cancer Community at Illinois. *Pathways*, Spring 2015, p. 9. Retrieved from https://illinois.edu/lb/files/2015/04/13/56713.pdf.
    - Cancer Community at Illinois. *Pathways*, Fall 2014, p. 13. Retrieved from https://illinois.edu/lb/files/2014/09/12/53941.pdf.