# Louis Kang

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## Position

**Miller Fellow**, University of California, Berkeley 2017–2020
Host departments: Physics and Helen Wills Neuroscience Institute
Host faculty: Michael DeWeese

## Education

**University of Pennsylvania**, Philadelphia, PA, USA
M.D., Perelman School of Medicine Expected 2017
Research elective with Vijay Balasubramanian in theoretical neuroscience
Ph.D., Department of Physics & Astronomy 2015
Thesis advisor: Tom C. Lubensky
Thesis title: *Chirality and its spontaneous symmetry breaking in two liquid crystal systems*

**Harvard University**, Cambridge, MA, USA
A.B. in Chemistry and Physics and Mathematics *summa cum laude* 2009

## Awards and Honors

**Medical Scientist Training Program** 2009–2017
National Institutes of Health

**Mary Ellis Bell Prize** 2016
University of Pennsylvania, Perelman School of Medicine
"This prize is given to a student in the School of Medicine who is engaged in noteworthy research in any field related to medicine."

**Werner Teutsch Memorial Prize** 2012
Univeristy of Pennsylvania, Department of Physics and Astronomy
"Awarded annually to the graduate student who, by his or her performance in the first year courses, shows the most promise for outstanding achievement in research."

**Phi Beta Kappa** 2009
Harvard University

## Publications

*equal contribution

**Kang L**, Lubensky TC. Chiral twist drives raft formation and organization in membranes composed of rod-like particles. *Proc Natl Acad Sci USA* 114, E19 (2017). arXiv:1608.07331.

**Kang L**, Gibaud T, Dogic Z, Lubensky TC. Entropic forces stabilize diverse emergent structures in colloidal membranes. *Soft Matter* 12, 386 (2016).

arXiv:1507.00746.

Davidson ZS*, **Kang L***, Jeong J*, Still T, Collings PJ, Lubensky TC, Yodh AG. Chiral structures and defects of lyotropic chromonic liquid crystals induced by saddle-splay elasticity. *Phys Rev E* 91, 050501 (2015). arXiv:1504.03619.

Jeong J*, **Kang L***, Davidson ZS, Collings PJ, Lubensky TC, Yodh AG. Chiral structures from achiral liquid crystals in cylindrical capillaries. *Proc Natl Acad Sci USA* 112, E1837 (2015).

Idema T, Dubuis JO, **Kang L**, Manning ML, Nelson PC, Lubensky TC, Liu AJ. The syncytial *Drosophila* embryo as a mechanically excitable medium. *PLOS ONE* 8, e77216 (2013). arXiv:1304.4025.

Heo M, **Kang L**, Shakhnovich EI. Emergence of species in evolutionary "simulated annealing". *Proc Natl Acad Sci USA* 106, 1869 (2009). arXiv:0810.1765.

## Contributed Talks

**American Physical Society March Meeting**, New Orleans, USA 2017
*Membrane rafts stabilized by chiral liquid crystal correction to bare interfacial tension*

**Computational and Systems Neuroscience (Cosyne)**, Salt Lake City, USA 2017
*Coupling between attractor networks naturally generates a discrete grid cell hierarchy*

**Gordon Research Conference & Seminar on Liquid Crystals**, Biddeford, ME, USA 2015
*Roles of entropy and chirality in depletion-induced colloidal membranes*

**American Chemical Society Colloid & Surface Science Symposium**, Philadelphia, USA 2014
*A theory for depletion-induced colloidal membranes*

**American Physical Society March Meeting**, Denver, USA 2014
*A theory for depletion-induced colloidal membranes*

**IAS Program on Frontiers of Soft Matter Physics**, Hong Kong 2014
*A theory for depletion-induced colloidal membranes*

**American Physical Society March Meeting**, Baltimore, USA 2013
*Mitotic wavefronts mediated by mechanical signaling in early* Drosophila *embryos*

## Teaching

**Teaching Assistant** 2011–2015
University of Pennsylvania
Modern physics, wave phenomena, honors electromagentism, physics laboratory

**Teaching Assistant** 2006–2007
Harvard University
Organic chemistry, linear algebra

## Clinical Service

**Medical Student Volunteer** 2010–2013
United Community Clinics
Provided patient care at a free health clinic in West Philadelphia

## References

**Tom C. Lubensky**
*Thesis advisor*
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**Vijay Balasubramanian**
*Research mentor*
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*Thesis committee chair*
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