

## Mary Jane Tsang Mui Ching

Whitehead Institute for Biomedical Research  
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### EDUCATION

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**Harvard University** Boston, MA  
Ph.D. Biological and Biomedical Sciences May 2016  
Dissertation: Mechanisms controlling the cell envelope remodeling activities of the *Escherichia coli* cytokinetic ring

**Massachusetts Institute of Technology** Cambridge, MA  
B.S. Chemical-Biological Engineering June 2010  
B.S. Biology June 2010

### RESEARCH EXPERIENCE

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**Whitehead Institute for Biomedical Research**, Cambridge, MA Mar 2017-present  
Postdoctoral Fellow, Advisor: Iain Cheeseman  

- Investigate a novel regulatory mechanism that modulates the function of the spindle assembly checkpoint in human cells
- Identify novel therapeutic targets for the treatment of human cancers associated with impaired spindle assembly checkpoint

**Harvard Medical School**, Boston, MA Sept 2011-Feb 2017  
Department of Microbiology and Immunobiology  
Graduate Student, Advisor: Thomas G. Bernhardt  

- Revealed a role for the division protein of unknown function, FtsL, in a sensing mechanism governing cell constriction initiation using genetics and microscopy
- Implemented a flow cytometry-based enrichment strategy to uncover a potential coupling between cell wall remodeling and outer membrane constriction during cytokinesis

**Massachusetts Institute of Technology**, Cambridge, MA Jan-May 2010  
Department of Biology  
UROP, Advisor: Uttam L. RajBhandary  

- Developed a method for the site-specific insertion *in vivo* of the amino acid analogue, benzoyl phenylalanine, into proteins in *Escherichia coli*

**Schlumberger-Doll Research Center**, Cambridge, MA Jun-Aug 2009  
Intern, Advisor: Christopher Harrison  

- Characterized the filtration of crude oils with a nanoporous membrane. Analyzed the effectiveness of water removal during filtration of crude oil emulsion with the membrane
- Evaluated the performance of a prototype microfluidic vibrating wire viscometer as a function of temperature, pressure and fluid viscosity

**Massachusetts Institute of Technology**, Cambridge, MA Sept 2008-May 2009  
Department of Chemical Engineering  
UROF, Advisor: Kristala Jones Prather

- Evaluated the sensitivity of an assay for D-glucuronate using the enzyme uronate dehydrogenase
- Experimentally determined the activity of the enzyme myo-inositol oxygenase using this enzymatic assay

**ESPCI Microfluidic (MMN) Laboratory**, Paris, France Jun-Aug 2008  
Intern, Advisor: Patrick Tabeling

- Studied droplet breakup at a T-junction in a microfluidic system
- Created a phase diagram classifying the different regimes of droplet breakup or no breakup
- Identified a new droplet breakup regime that has not been reported in the literature

## TEACHING EXPERIENCE

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**Whitehead Institute for Biomedical Research**, Cambridge, MA  
Foldscope Instructor, Expedition: Bio Summer 2018-present

**Massachusetts Institute of Technology**, Cambridge, MA

Mentor, MIT Summer Research Program (MSRP)	Jun-Aug 2020
Teaching Assistant, Introduction to Molecular Biology Techniques	Jan 2018
Teaching Assistant, Introductory Biology	Spring 2008, 2009
Teaching Assistant, Principles of Chemical Science	Fall 2008
Teaching Assistant, Calculus I and II	Fall 2007

**Harvard University**, Boston, MA  
Teaching Assistant, Principles of Genetics Fall 2011

## OTHER PROFESSIONAL EXPERIENCE

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Fellows Selection Committee, Intersections Science Symposium	2021
Path to Professorship Workshop for academic-bound women at MIT	2020
Whitehead Partner for Whitehead High School Teacher Program	2018-present
Whitehead Postdoctoral Association Member	2018-present

## HONORS

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Harvey Lodish Service Award	2021
Whitehead Postdoc Association Educational Award	2019
Director's Fellowship Allowance for Postdoctoral Fellows	2018
Hope Funds for Cancer Research Postdoctoral Fellowship	2018-2021
Roger de Friez Hunneman Prize for outstanding scholarship and research in Chemical Engineering	2010
Phi Beta Kappa Society	2010
Tau Beta Pi engineering honor society	2008
National Society of Collegiate Scholars	2008
National Scholar of Mauritius	2006-2010

## CONFERENCE PRESENTATIONS

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- Tsang, M.-J.** and Cheeseman, I. "Setting a timer for mitosis: how do cells slip out?"
- Hope Funds for Cancer Research Science Convening, oral presentation 2021
  - Hope Funds for Cancer Research Science Convening, oral presentation 2020
  - Whitehead Forum Seminar Series, oral presentation 2019
- Tsang, M.-J.** and Cheeseman, I. "Novel regulation of Cdc20 expression alters checkpoint function and promotes mitotic slippage"
- EMBO Workshop "Chromosome segregation and aneuploidy", poster presentation 2019
  - MIT Cell Growth, Division & Beyond (CDAB), oral presentation 2019
- Tsang, M.-J.** and Bernhardt, T.G. "A potential link between septal peptidoglycan remodeling and outer membrane constriction in *Escherichia coli*"
- EMBO Workshop "Bacterial Cell Division: Orchestrating the Ring Cycle", poster presentation 2016
- Tsang, M.-J.** and Bernhardt, T.G. "A role for the FtsQLB complex in cytokinetic ring activation revealed by an *ftsL* allele that accelerates division"
- Molecular Genetics of Bacteria and Phages Meeting, oral presentation 2015
  - ASM Prokaryotic Cell Biology and Development, poster presentation 2015
  - Boston Bacterial Meeting, poster presentation 2014
- Tsang Mui Ching, M.-J.** and Bernhardt, T.G. "A potential role for FtsL in regulating bacterial cytokinetic ring activity"
- Harvard Medical School Student/Postdoc Seminar Series, oral presentation 2014
- Tsang Mui Ching, M.-J.** and Bernhardt, T.G. "A potential role for FtsL in regulating divisome activity"
- Molecular Genetics of Bacteria and Phages Meeting, poster presentation 2014
  - Zing Bacterial Cell Biology Conference, poster presentation 2013

## PUBLICATIONS

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- Su, K.C., **Tsang, M.-J.**, Emans, N., Cheeseman, I.M. (2018) CRISPR/Cas9-based gene targeting using synthetic guide RNAs enables robust cell biological analyses. *Mol Biol Cell*. 29, 2370-2377.
- Tsang, M.-J.**, Yakhnina, A.A., Bernhardt, T.G. (2017) NlpD links cell wall remodeling and outer membrane invagination during cytokinesis in *Escherichia coli*. *PLoS genetics* 13, e1006888.
- Tsang, M.-J.**, and Bernhardt, T.G. (2015) A role for the FtsQLB complex in cytokinetic ring activation revealed by an *ftsL* allele that accelerates division. *Mol Microbiol* 95, 925-944.
- Tsang, M.-J.**, and Bernhardt, T.G. (2015) Guiding divisome assembly and controlling its activity. *Curr Opin Microbiol* 24, 60-65.

**Tsang Mui Ching, M.-J.**, Pomerantz, A.E., Andrews, A.B., Dryden, P., Schroeder, R., Mullins, O.C., Harrison, C. (2010) On the Nanofiltration of Asphaltene Solutions, Crude Oils, and Emulsions. *Energy Fuels* 24, 5028-5037.

Jullien, M.-C., **Tsang Mui Ching, M.-J.**, Cohen, C., Menetrier, L., Tabeling, P. (2009) Droplet breakup in microfluidic T-junctions at small capillary numbers. *Physics of Fluids* 21, 072001.

Moon, T.S., Yoon, S.-H., **Tsang Mui Ching, M.-J.**, Lanza, A.M., Prather, K.L.J. (2009) Enzymatic assay of D-glucuronate using uronate dehydrogenase. *Analytical Biochemistry* 392, 183-185.

## **PATENTS AND APPLICATIONS**

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**Tsang Mui Ching, M.J.**, Cheeseman, I. (2021) CDC20 Variants Resistant to Anti-mitotic Drugs and Related Methods and Compositions.

Zuo, Y, Freed, D.E., Mullins, O.C., Harrison, C., **Tsang Mui Ching, M.J.**, Zeng, H. (2016) Methods and apparatus for characterization of petroleum fluid employing analysis of high molecular weight components.