ALICE Y. CHEUNG
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EDUCATION

1976	B.A., Biochemistry, Smith College, Northampton, MA.
1982	Ph.D., Molecular Biophysics and Biochemistry, Yale University, New Haven, CT.
1982-1986	Postdoctoral Fellow, Harvard University, Cambridge, MA.

APPOINTMENTS

2022-	Distinguished University Professor
1997-	Professor Department of Biochemistry and Molecular Biology University of Massachusetts, Amherst, MA.
1993-1997	Associate Professor, Biology Department, Yale University, New Haven, CT.
1987-1993	Assistant Professor, Biology Department, Yale University, New Haven, CT.

AWARDS AND HONORS

2025	Member, National Academy of Sciences
2024	Spotlight Scholars, University of Massachusetts, Amherst
2020	Fellow, American Association for the Advancement of Science
2020	Lawrence Bogorad Award for Excellence in Plant Biology Research, American Society of Plant Biologists
2018	Samuel F. Conti Faculty Fellowship Award, University of Massachusetts, Amherst [Highest University recognition of research excellence]
2014	Distinguished Faculty Lecturer (a public lecture series) and Recipient of Chancellor's Medal, University of Massachusetts, Amherst
2012	Outstanding Research Award, College of Natural Sciences (CNS), University of Massachusetts, Amherst
2010	Research Leadership in Action Award, University of Massachusetts, Amherst
2010	Fellow, American Society of Plant Biologists
1991	Yale University Junior Faculty Fellowship
1982-1986	Rockefeller Foundation Postdoctoral Fellow and Research Award

SOCIETY MEMERSHIP

- American Society of Plant Biologists
- American Association for the Advancement of Science
- International Society of Sexual Plant Reproduction

PUBLICATIONS

***, co-corresponding on collaborative papers**

114. Cao Y, Cui X, Yang Y, Pan L, Yang F, Li S, Wu D, Ding Y, Chen R, Wang N, Liu S, Ji J, Zhao Y, Chen Y, Sun R, Xian S, Yang L, Hui J, Li R, Zhang T, Dou S, Song G, Wei X, Yuan Y, Zhang X, Chen M, Sun X, Wu H-M, Cheung AY*, Duan Q-h. (2025) Pan-family pollen signals control an interspecific stigma barrier across Brassicaceae species. *Science* Accepted, October 2025.
113. Zhang R, Li Yl, Li Yw, Ma H, Zuo C, Yang J, Ma Y, Kong J, Wei X, Zhu L, **Cheung AY**, Zhang X, Min L. (2025) Polyploidization-driven formation of the GhRALF30L gene cluster confers basal thermotolerance in cotton male reproductive organs via GhFERA1/GhCAPA1. *Sci Adv 11,eady 1386.*]
112**.** Zhang X, Jiang H, Zhu G, Chen F, Yuan W, Li Y, Zhang W, Wu D, Liu H, Wu HM, **Cheung AY**, Tao L-Z. (2025) RLCKs phosphorylate RopGEFs to control auxin-dependent Arabidopsis development. *Nature Plants*, October, 2025. https://doi.org/10.1038/s41477-025-02111-9
111. **Cheung AY**, Wu HM. FERONIA: a MALECTIN-domain receptor kinase with intricate signaling mechanisms and profound importance to plant wellness. *Yale J Biology & Medicine 98, 53-68*
110. Chaudhary A, Hsiao Y-C, Yeh F-LJ, Zupunski M, Zhang H, Aizezi Y, Malkovskiy A, Grossmann G, Wu HM. **Cheung AY**, Xu S-L, Wang Z-Y. FERONIA signaling maintains cell wall integrity during brassinosterod-induced cell expansion in Arabidopsis *Molecular Plant 18, 603-618*
109. Sugi N and a consortium of 43 additional authors. (2024) The peri-germ cell membrane: poorly characterized but key interface for plant reproduction. *Nature Plants 10, 1607-1609*
108. Zhong S, Zhao P, Peng X, Li H, Duan Q, **Cheung AY**. (2024) Plant reproduction: advances in mechanistic understanding and emerging possibilities. *Plant Physiology 195, 4-35*. The Plant Cell joint special issue for the Centennial Celebration of the American Society of Plant Biology.
107. **Cheung AY**. FERONIA: a receptor kinase at the core of a global signaling network. (2024) *Annu. Rev. Plant Biology 75, 22.1-22.31*
106. Liu M-C J, Yeh F-L J, Yvon R, Simpson K*, Chambers J, Wu H-M, **Cheung AY**. (2024) Extracellular pectin-RALF peptide phase separation mediates FERONIA global signaling function. *Cell 187, 312-330.*
105. Huang J, Yang L, Zhang L, Zhao Y, Yang L, Wu X, Hui J, Cui X, Yang H, Liu S, Xu Q, Pang M, Cao Y, Xu G, Chen Y, Ren X, Lv J, Yu J, Ding J, Wang N, Wei X, Lin Q, Yuan Y, Zhang X, Ma C, Cheng, Dai C, Wang P, Wang Y, Cheng F, Zeng W, Palanivelu R, Wu H-M, Zhang X, **Cheung AY (co-corresponding)**, Duan Q. (2023) Stigma receptors control intra– and interspecies barriers in Brassicaceae. *Nature* 614, 303-308.
104. Liu H, Huang J, Zhang X, Liu G, Liang W, Zhu G, Dong M, Li M, Zhang J, Yang W, Xiao W, **Cheung AY**, Tao L-Z. (2023) The rice RAC/ROP GTPase Activator OsRopGEF10 functions in crown root development by regulating cytokinin signaling. *The Plant Cell* 35, 453-468.
103. Noble JA, Bielski NV, Liu, M-C J, DeFalco TA, Stegmann M, Nelson ADL, McNamara K, Sullivan S, Dinh KK, Khuu N, Hancock S, Shiu S-H, Zipfel C, **Cheung AY**, Beilstein MA, Palanivelu R. (2022). Evolutionary analysis of the LORELEI gene family in plants reveals regulatory subfunctionalization. *Plant Physiol* 190, 2539-2556.

102. **Cheung AY**, Duan Q-h, Li C, Liu M-D J, Wu H-M. 2022. Pollen-pistil interactions: it takes two to tangle but a molecular cast of many to deliver. *Curr Opin. Plant Biol.* 10.1016/j.pbi.2022.102279.
101. Zhong S, Li L, Wang Z, Ge Z, Li Q, Bleckmann A, Wang J, Song, Z, Shi Y, Liu T, Li L, Zhou H, Wang Y, Zhang L, Wu H-M, Lai L, Gu H, Dong J, **Cheung AY**, Dresselhaus T, Qu L-j. (2022) RALF peptide signaling controls the polytubey block in Arabidopsis. *Science* 375, 290-296.
100. **Cheung AY**, Cosgrove D, Hara-Nishimura I, Jurgens G, Llyod C, Robinson DG, Staehelin LA, Weijers D. (2022) A rich and bountiful harvest – Key discoveries in Plant Cell Biology. *Plant Cell* 34, 53-71 (An invited collective article on plant cell biology breakthroughs in the past decades for a focus issue on Plant Cell Biology) https://doi.org/10.1093/plcell/koab234
99. Yang H, Wang D, Guo L, Pan H, Yvon R, Garman S, Wu H-M, **Cheung AY**. (2021) Malectin/Malectin-domain-containing proteins: A repertoire of cell surface molecules with broad functional potential. *The Cell Surface* 7. https://doi.org/10.1016/j.tcsw.2021.100056
98. Zhang L, Huang J, Su S, Wei X, Yang, L, Zhao H, Yu J Wang J, Hui J, Hao, S, Song S, Cao Y, Wang M, Zhang X, Zhao Y, Wang Z, Zeng W, Wu H-M, Yuan Y, **Cheung AY**, Duan Q. 2021. FERONIA-regulated reactive oxygen species mediate self-incompatibility in Brassica rapa. *Current Biology* (May 18, 2021). doi: 10.1016/j.cub.2021.04.060.
97. Liu C, Shen L, Xiao Y, Vyshedsky D, Peng C, Sun X, Liu Z, Cheng L, Zhang H, Han Z, Chai J, Wu H-M, **Cheung AY**, Li C. 2021. Pollen PCP-B peptides unlock a stigma peptide-receptor kinase gated mechanism for pollination. *Science* 372, 171-175. doi: 10.1126/science.abc6107. PubMed PMID: 33833120.
96. Wang J, Guo X, Xiao Q, Zhu J, **Cheung AY**, Yuan L, Vierling E, Xu S. (2020) Auxin efflux controls orderly nucellar degeneration and expansion of the female gametophyte in Arabidopsis. *New Phytol* 230, 2261-2274. https://doi.org/10.1111/nph.17152
95. Huang J, Su S, Dai H, Liu C, Wei X, Zhao Y, Wang Z, Zhang X, Yuan Y, Yu X, Zhang C, Li Y, Zeng W, Wu H-M, **Cheung AY**, Wang S, Duan Q. (2020) Senescence breaks down self-incompatibility by causing programmed cell death in stigmatic papilla cells in Chinese cabbage and radish. *Front Plant Sci* https://doi.org/10.3389/fpls.2020.586901 [A product of continued mentoring of former postdoc QH Duan on a project initiated in my lab]
94. Noble JA, Liu M-C J, DeFalco TA, Stegmann M, McNamara K, Sullivan B, Dinh KK, Khuu N, Hancock S, Shiu S-H, Zipfel C, Beilstein MA, **Cheung AY**, Palanivelu R. (2020) Conserved Molecular function and regulatory subfunctionalization of the LORELEI gene family in Brassicaceae. bioRxiv doi: https://doi.org/10.1101/2020.04.27.062893. Published (#103)
93. Duan Q-h, Liu M-C J (co-first), Kita, D, Jordan S, Yeh F-L J, Yvon R, Carpenter H, Federico AN, *Garcia Valencia L*, Eyles SJ, Wang C-s, Wu H-M, **Cheung AY**. (2020) FERONA controls pectin- and nitric oxide-mediated male-female interaction. *Nature, 579, 561-566.*
92. Zhao P, Zhou X-m, Zhao L-l, **Cheung AY**, Sun M-X. (2020) Autopathy-mediated compartmental cytoplasmic deletion is essential for tobacco pollen germination and male fertility. January 30, 2020, *Autophagy,* doi: 10.1080/15548627.2020.1719722
91. Cheung AY. (2019) To live, or not to live, that is the question. *Current Biology, 29, R1174-R1178* (A Commentary).
90. Ge Z, Zhao Y, Liu M-C, Wang L, Zhong S, Hou S, Jian J, Liu T, Huang Q, Xiao J, Gu H, Wu H-M, Dong J, Dresselhaus T, **Cheung AY**, Qu L-J. (2019) LLG2/3 are co-receptors in BUPS/ANX-RALF signaling to regulate Arabidopsis pollen tube integrity. *Current Biology 29, 3256-3265*.

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88. Ge Z, **Cheung AY**, Qu L-J. (2019) Pollen tube integrity regulation in flowering plants: insights from molecular assemblies on the pollen tube surface. *New Phytologist 222, 687-693*.
87. Duan Q-h, **Cheung AY**. 2018. Context-specific dependence on FERONIA kinase activity. *FEBS Lett 592: 2392-2394*. [A Commentary]
86. Feng W, Kita D, Peaucelle A, Doan V, Duan Q-h, Liu M-C, Maman J, Yvon R, Steinhorst L, Schmitz-Thom I, Cartwrigh HN, Kudla J, Wu H-M, **Cheung AY (co-corresponding),** Dinneny JD. (2018) The FERONIA receptor kinase maintains cell wall integrity during salt stress through Ca^{2+} signaling. *Curr Biology 28, 666-675*.
85. Ge Z, Bergonci T (co-first), Zhao Y, Zou Y, Du S, Liu M-C, Luo X, Ruan H, García-Valencia LE, Zhong S, Hou S, Huang Q, Lai L, Moura DS, Gu H, Dong J, Wu H-M Dresselhaus T, Xiao J, **Cheung AY (co-corresponding)**, Qu L-J. (2017) Arabidopsis pollen tube integrity and sperm release are regulated by RALF-mediated signaling. *Science 358, 1596-1600.*
84. Garcia-Valencia LE, Bravo-Alberto CE, Wu H-M, Rodriguez-Sotres R, **Cheung AY**, Cruz-Garcia F. (2017) SIPP, a novel mitochondrial phosphate carrier mediates self-incompatibility. *Plant Physiol. 175, 1105-1120*. doi:10.1104/pp.16.01884
83. Liu Y, Dong Q, Kita D, Liu G, Wu X, Zhu X, **Cheung AY**, Wu H-M, Tao L-z. (2017) RopGEF1 plays a critical role in polar auxin transport in early development. *Plant Physiol. 175, 157-171*. Doi:10.1104/pp.17.00697.
82. Padmanaban S, Czerny DD, Levin K, Leydon RR, Su RT, Maugel TK, Zou YJ, Chanroj S, **Cheung AY**, Johnson MA, Sze, H. (2017) Transporters involved in pH and K^+ homeostasis affect pollen wall formation, male fertility and embryo development. *J. Exp. Bot*. 68*, 3165-3178*. doi:10.1093/jxb/erw483
81. Li C, Wu H-M, **Cheung AY**. (2016) FERONIA and her pals: functions and mechanisms. *Plant Physiol 171, 2379-2391* [A Review]
80. **Cheung AY**, Wu, H-M. (2016) LURE is bait for multiple receptors. *Nature 531, 178-180*. [A News and Views]
79. **Cheung AY**, Wu H-M. (2015) SERKs: Putting plant mouths in their right place. *Curr. Biol. 25, R827-844*. [A Commentary]
78. Li C, Yeh FL, **Cheung AY** (co-corresponding), Duan Q-h, Kita D, Liu M-C, Maman J, Luu EJ, Wu BW, Gates L, Jalal M, Kwong A, Carpenter H, Wu H-M. (2015) Glycosylphosphatidylinositol-anchored proteins act as chaperones and co-receptors for FERONIA receptor kinase signaling in Arabidopsis. *eLife*, *4:e06587*.
77. Hernadez-Barrera A, Zepeda I, Sanchez F, Quinto C, Sanchez R, Wu H-M, **Cheung A.** Cardenas, L. (2015) Hyper, a hydrogen peroxide sensor, depicts the sensitivity of the Arabidopsis root elongation zone to aluminum treatment. *Sensors 15, 855-867*.
76. **Cheung AY**, Li C, Zou Y, Wu H-M. (2014) Glycosylphosphatidylinositol anchoring: control through modification. *Plant Physiol. 166, 748-750.* [A Commentary]
75. Huang JB, Liu H, Chen M, Li X, Wang M, Yang Y, Wang C, Huang J, Liu G, Liu Y, Xu J, **Cheung AY**, Tao L-z. (2014) ROP3 GTPase contributes to polar auxin transport and auxin responses and is important for embryogenesis and seedling growth in Arabidopsis. *Plant Cell 26, 3501-3518*.
74. Duan Q, Kita D (co-first), Johnson EA, Aggarwal M, Gates L, Wu HM, **Cheung AY.** (2014) Reactive oxygen species mediate pollen tube rupture to release sperm for fertilization in

Arabidopsis. *Nature Commun. 5, 3129*.

73. Wang H, Zhuang X, Cai Y, **Cheung AY**, Liwen J. (2013) Apical F-actin regulated exocytic targeting of NtPPMEI1 is essential for pollen tube cell wall construction and rigidity. *Plant J. 76, 367-379*.
72. Nibau C, Tao L-z, Levasseur K, Wu H-M, **Cheung AY.** (2013) The Arabidopsis small GTPase AtRac7/ROP9 is a modulator of auxin and ABA signaling. *J. Exp. Bot. 64, 3425-3437*.
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70. Chen CY, Zheng W-G, **Cheung AY** (Coresponding), Wu H-M. (2013) Pollen germination activates the apical membrane located RAC/ROP GTPase switch. *Mol Plant* 6, *1358-1361*. (Cover)
69. Yu F, Qian L, Nibau C, Duan Q-H, Kita D, Levasseur K, Li X, Lu C, Li H, Hou C, Li L, Buchanan BB, Chen L, **Cheung AY**, Li D, Luan S. (2012) FERONIA receptor kinase pathway suppresses abscisic acid signaling in Arabidopsis by activating ABI2 phosphatase. *Proc. Natl. Acad. Sci. USA 109, 14693-14698*.
68. Wu HM, **Cheung AY**. (2011) THESEUS and relatives: cell wall-sensing receptor- like kinases. *Curr. Opin. Plant Biol. 14, 632-641.* [A review]
67. Zou Y-j, Aggarwal M, Zheng W-G, Wu H-M, **Cheung AY.** (2011) Receptor-like kinases as surface regulators for RAC/ROP-mediated pollen tube growth and interaction with the pistil. *AoB PLANTS* 2011 *plr017, doi:10.1093/aobpla/plr01770.* [A review]
66. Chen M, Liu H, Kong X, Zhang N, Yang Y, Li R, Yue J, Chen D, Tian R, Li C, **Cheung AY**, Tao L-z. (2011) The RopGEF7 is required to control Plethora (PLT)-dependent maintenance of root stem cell niche in Arabidopsis. *Plant Cell 23, 2880-2894.*
65. Nieuwland J, de Graaf BHJ, **Cheung AY** (corresponding), Bosch M. (2011) Plant Reproduction: Does size matter? *New Phytologist 190, 812-815.* [A Commentary]
64. Wu H-M, Hazak O, **Cheung AY** (corresponding), Yalovsky S. (2011) RAC/ROP GTPases and auxin signaling: A Perspective. *Plant Cell 23, 1208-1218*. [A review]
63. Nibau C, **Cheung AY**. (2011) The CrRLK family of receptor kinases -- a novel and conserved role in the control of polar cell growth: a review. *Plant Signaling and Behavior 6, 652-656*. [A review]
62. Lu Y, Chanroj S, Zulkifli L, Johnson M, Uozumi N, **Cheung AY**, Sze H. (2011) Pollen tubes lacking a pair of cation/H^+ exchangers fail to target ovules in Arabidopsis. *Plant Cell 23, 81-93*.
61. Nibau C, Di Stilio V, Wu H-M, **Cheung AY.** (2010) Tobacco and Arabidopsis SUPERMAN regulate hormone signaling and mediate cell proliferation and differentiation. *J. Exp. Bot. 62, 949-961*.
60. Duan Q-h, Kita D, Li C, **Cheung AY** (corresponding), Wu H-M. (2010) FERONIA receptor-like kinase regulates RHO GTPase signaling of root hair development. *Proc. Natl. Acad. Sci. USA. 107, 17821-17826.*
59. **Cheung AY**, Niroomand S, Zou Y, Wu H-M. (2010) A transmembrane formin nucleates subapical actin assembly and controls tip-focused growth in pollen tubes. *Proc. Natl. Acad. Sci. USA. 107, 16390-16395*.
58. **Cheung AY**, Boavida L, Agarwal M, Wu H-M, Feijo J. (2010) The pollen tube journey in the pistil and imaging the in vivo process by two-photon microscopy. *J. Exp. Bot. 61, 1907-1915*. (Cover)
57. Wu H-M, Chen C, Duan Q-h, Kita D, Tao L, **Cheung AY.** (2009) Rac/Rop GTPases in the Regulation of Polarity and Polar Cell Growth. In "Integrated G Proteins Signaling in Plants",

Eds. S. Yalovsky, F. Baluska, and A. Jones, Springer-Verlag.

56. Nielsen E, **Cheung AY** (corresponding), Ueda T. (2008) The regulatory RAB and ARF GTPases for vesicular trafficking. *Plant Physiology 147, 1516-1526*.

55. **Cheung AY,** Duan Q-h, de Costa S, de Graaf B, di Stilio V, Wu H-M, Feijo J. (2008) The dynamic pollen tube cytoskeleton: Live cell studies using actin-binding and microtubule-binding reporter proteins. *Molecular Plant 1, 686-702.*

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51. Nibau C, Wu H-M, **Cheung AY.** (2006) RAC/ROP GTPases: "Hubs" for signal integration and diversification in plants. *Trends in Plant Science 11, 310-315*. [A Review]

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49. de Graaf BHJ, **Cheung AY** (corresponding), Andreyeva T, Levasseur K, Kieliszewski M, Wu H-M. (2005) Rab11 GTPase-regulated membrane trafficking is crucial for tip-focused Pollen tube growth in tobacco. *Plant Cell 17, 2564-2579*.

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46. **Cheung AY**, Wu, H-M. (2004) Over-expression of an Arabidopsis formin stimulates supernumerary actin cable formation from pollen tube cell membrane. *Plant Cell 16, 257-269*.

45. **Cheung AY,** Chen C, Tao L-z, Andreyeva T, Twell D, Wu H-M. (2003) Regulation of pollen tube growth by Rac-like GTPases. *J. Exp. Bot. 54, 73-81*.

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43. Tao L-z, **Cheung AY** (corresponding), Wu H-M. (2002) Plant Rac-like GTPases are activated by auxin and mediate auxin responsive gene expression. *Plant Cell 14, 2745-2760*.

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Cell and Dev. Biol. 17, 159-187. [A review]
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28. **Cheung AY.** (1996) Pollen tube growth pathway: its contribution and response to pollination. *Sex. Plant Reproduction 9, 330-336*. [A review]
27. **Cheung AY.** (1996) Pollen-pistil interactions during pollen tube growth. *Trends in Plant Science 1, 45-51*. [A review]
26. Zhan X-y, Wu H-M, **Cheung AY.** (1996) Nuclear male sterility induced by pollen-specific expression of a ribonuclease. *Sex. Plant Reprod. 9, 35-43*.
25. Wang H, Wu H-M, **Cheung AY.** (1996) Pollination induces mRNA poly(A) tail-shortening and cell deterioration in flower transmitting tissue. *Plant J. 9, 715-727*.
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23. Wu H-M, Wang H, **Cheung AY.** (1995) A pollen tube growth stimulatory glycoprotein is deglycosylated by pollen tubes and displays a glycosylation gradient in the flower. *Cell 82, 394-403.*
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19. **Cheung AY**, McNellis T, Piekos B. (1993) Maintenance of chloroplast components during chromoplast differentiation in the tomato mutant *greenflesh*. *Plant Physiol 101, 1223-1229*.
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Co-editors: Li-Jia Qu (Peking University, China), Eugenia Russinova (Ghent University, Belgium), Cyril Ziphel (University of Zurich, Switzerland), Yunde Zhao (UC San Diego)

Flowering and Reproduction (2017) *Plant Physiology*, Vol. 173. The issue features 15 review articles and around twenty research articles in the focus area.

Co-editors: Richard Amasino (University of Wisconsin), Thomas Dresselhaus (University of Regenburg, Germany), Cris Kuhlemeier (University of Bern, Switzerland).

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Co-editors, Wei-hua Tang (CAS, China), Hong-wei Xue (CAS, China), Weicai Yang (CAS, China), Ravi Palanivelu (University of Arizona).

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