Stanford

Martha S. Cyert

Dr. Nancy Chang Professor

Biology

CONTACT INFORMATION

- **Administrative Contact**

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Bio

BIO

Dr. Martha Cyert directs a research lab that studies Ca2+-dependent signal transduction, focusing on calcineurin, the highly conserved Ca2+/calmodulin-regulated protein phosphatase that plays critical roles in muscle, immune and neural cells. Dr. Cyert pioneered studies of yeast calcineurin, where her work elucidated conserved aspects of substrate recognition and mechanisms by which the signaling network evolves. Her studies on human calcineurin uncovered the mechanism by which immunosuppressant drugs, FK506 and cyclosporine A, inhibit this enzyme. More recently, her lab established the human calcineurin signaling network, using both experimental and computational approaches, which uncovered many new functions and substrates for calcineurin, including a conserved role in regulating nuclear transport via the nuclear pore complex. Professor Cyert is also an active educator. She received the Stanford Biosciences Excellence in Mentoring award, developed an innovative, inquiry-based, introductory laboratory course for undergraduates that examines p53, and initiated a summer transition program for incoming freshman from under resourced schools. She directed an NIH-funded graduate training program in Cell and Molecular Biology (2009-2019), and was an instructor for Cell Biology workshops in Ghana that were sponsored by the ASCB. Her administrative roles include serving as Senior Associate Vice Provost for Undergraduate Education from 2010-13, and Associate Chair of the Biology department (2014-2020), where she is now Chair. Dr. Cyert is a member of the Stanford Cardiovascular and Bio-X Institutes and plays leadership roles at the American Society for Biochemistry and Molecular Biology (ASBMB). She has been awarded fellowships from the American Cancer Society, the Life Sciences Research Foundation and the Lucille P. Markey Charitable Trust, and was named by Stanford University as a Terman Fellow, a Gabilan Fellow, and as the Thomas W. and Susan B. Ford University Fellow in Undergraduate Education.

ACADEMIC APPOINTMENTS

- Professor, Biology
- Member, Bio-X
- Member, Cardiovascular Institute
- Faculty Fellow, Sarafan ChEM-H

ADMINISTRATIVE APPOINTMENTS

- Chair, Department of Biology, (2020- present)
- Associate Chair, Department of Biology, (2014-2020)
- Senior Associate Vice Provost for Undergraduate Education, Stanfiord University, (2010-2013)

- Director, Graduate training program in Cell and Molecular Biology, Stanford Unviersity, (2009-2019)

HONORS AND AWARDS

- Excellence in Mentoring and Service Award, Stanford Biosciences (2015)
- Gabilan Fellow, Stanford University (2014-present)
- Thomas W. and Susan B. Ford University Fellow in Undergraduate Education, Stanford University (2012-present)
- Dean's Award for Outstanding Teaching, Stanford University (2004)
- Terman Fellow, Stanford University (2000)
- Scholar, Lucille P. Markey Charitable Trust (1997)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Conference Co-organizer, ASBMB 2022 meeting (2021 - present)
- Conference Organizer, FASEB SRC on Protein Phosphatases (2018 - 2018)
- Editorial Board, Open Biology (2017 - present)
- Public Affairs Advisory Council, Ameican Society for Biochemisty and Molecular Biology (2015 - present)
- Advisory Board, Leland Scholars Program, Stanford University (2014 - present)
- Organizer, Protein Phosphatases FASEB condference (2014 - present)
- Editorial Board, Molecular and Cellular Biology (2009 - present)
- Leadership Council, BioX (2004 - present)
- Organizer, International Symposium Calcium Binding Proteins (2002 - present)

PROFESSIONAL EDUCATION

- Postdoctoral Fellow, University of California, Berkeley , Biochemistry (1992)
- Ph D., UCSF , Genetics (1988)
- A.B., Harvard University , Biochemistry (1980)

COMMUNITY AND INTERNATIONAL WORK

- African Regional Workshops on the Cell Biology of Infectious Pathogens, Ghana

LINKS

- Cyert Lab website: https://www.cyertlab.com/
- Profile on Research gate: https://www.researchgate.net/profile/Martha_Cyert/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

1. MAPPING THE HUMAN CALCINEURIN PHOSPHATASE SIGNALING NETWORK THROUGH GLOBAL IDENTIFICATION OF SHORT LINEAR MOTIFS THAT MEDIATE SUBSTRATE RECOGNITION.

Systems-level analyses of phosphorylation-based signaling networks has transformed our understanding of kinase function, but knowledge of phosphatase signaling has lagged behind, primarily because global approaches to identify phosphatase substrates are lacking. Calcineurin, the conserved Ca2+/calmodulin-dependent protein phosphatase and target of immunosuppressants, FK506 and Cyclosporin A, is ubiquitously expressed, and critically regulates Ca2+-dependent processes in the immune system, heart, and brain. However, in the literature only ~70 substrates are attributed to calcineurin. Systematic identification of calcineurin targets is now feasible due to insights into its conserved mechanism of substrate recognition. Calcineurin acts on phosphosites with little primary sequence similarity; thus specificity is not encoded within regions contiguous to the phosphosite. Rather, the enzyme binds to short linear motifs (SLiMs),“PxIxIT” and “LxVP”, which can occur hundreds of

residues away from dephosphorylation sites. CsA , FK506 and the viral A238L protein inhibit calcineurin by blocking SLiM binding to conserved surfaces on the enzyme. SLiMs are a growing class of sequences that localize within intrinsically disordered regions, i.e. flexible protein domains that lack a defined structure. SLiMs mediate most protein-protein interactions in cells and evolve rapidly to mediate rewiring of signaling networks, including that of calcineurin. However, degenerate sequences and low affinities for their target domains make SLiMs challenging to identify. We are using novel experimental and computational approaches to identify calcineurin-binding SLiMs systematically in the human proteome. Calcineurin-binding sequences of the PxIxIT and LxVP types were identified from the human proteome using phage display, and this large collection of sequences allowed us to develop robust strategies to identify these SLiMs in silico. Also, using proximity-dependent biotinylation we identified calcineurin proximal proteins at the centrosome and nuclear pore complex (NPC). These systematic approaches led us to identify conserved regulation of NPC proteins and nuclear transport by calcineurin, and we are continuing to discover global functions for this phosphatase in humans.

2. FUNCTIONAL STUDIES OF HUMAN CNA#1 SPLICE VARIANT

Calcineurin is tightly controlled by Ca2+ and calmodulin, which activate the enzyme by relieving auto-inhibition of the active site, and revealing a critical binding pocket for "LxVP" substrate motifs. We are studying a conserved splice variant of the human CNA# gene, CNA#1, which promotes cardiac regeneration in vivo. CNA#1 has distinct enzymatic properties, and associates with membranes via conserved sites of palmitoylation in its C-terminus. Functional studies are identifying and characterizing unique protein partners for CNA#1 and its substrates in cardiovascular and endocrine signaling. Specifically, our studies establish roles for CNA#1 in regulating phosphoinositide signaling during activation of G-protein couple receptors (GPCRs).

Teaching

COURSES

2023-24

- Introduction to Laboratory Research in Cell and Molecular Biology: BIO 45 (Aut, Win)

2022-23

- Introduction to Laboratory Research in Cell and Molecular Biology: BIO 45 (Aut, Win)

2021-22

- Introduction to Laboratory Research in Cell and Molecular Biology: BIO 45 (Aut, Win)

2020-21

- Introduction to Laboratory Research in Cell and Molecular Biology: BIO 45 (Aut, Win)
- Problem solving in infectious disease: BIO 60 (Sum)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Cecelia Brown, Rebecca Chan, Jacob Kim, Korbin Kleczko, Rachel Ng, Alex Van Elgort

Postdoctoral Faculty Sponsor

William King, Sneha Roy, Richard Smith

Doctoral Dissertation Advisor (AC)

Devin Bradburn

Doctoral (Program)

Devin Bradburn

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biology (School of Humanities and Sciences) (Phd Program)

- Cancer Biology (Phd Program)

Publications

PUBLICATIONS

- **Calcineurin associates with centrosomes and regulates cilia length maintenance.** *Journal of cell science*
  Tsekitsidou, E., Wong, C. J., Ulengin-Talkish, I., Barth, A. I., Stearns, T., Gingras, A. C., Wang, J. T., Cyert, M. S.
  2023

- **A cellular atlas of calcineurin signaling.** *Biochimica et biophysica acta. Molecular cell research*
  Ulengin-Talkish, I., Cyert, M. S.
  2022: 119366

- **Palmitoylation Targets the Calcineurin Phosphatase to the Phosphatidylinositol 4-kinase Complex at the Plasma Membrane.** *FASEB journal : official publication of the Federation of American Societies for Experimental Biology*
  Cyert, M., Ulengin-Talkish, I., Parson, M. A., Jenkins, M. L., Roy, J., Shih, A. Z., St-Denis, N., Gulyas, G., Balla, T., Gingras, A., Varnai, P., Conibear, E., Burke, et al
  2022; 36 Suppl 1

- **Palmitoylation targets the calcineurin phosphatase to the phosphatidylinositol 4-kinase complex at the plasma membrane.** *Nature communications*
  Ulengin-Talkish, I., Parson, M. A., Jenkins, M. L., Roy, J., Shih, A. Z., St-Denis, N., Gulyas, G., Balla, T., Gingras, A., Varnai, P., Conibear, E., Burke, J. E., Cyert, et al
  2021; 12 (1): 6064

- **A Calcineurin-hoxb13 Axis Regulates Growth Mode of Mammalian Cardiomyocytes**
  Ngoc Uyen Nhi Nguyen, Canseco, D. C., Xiao, F., Nakada, Y., Li, S., Lam, N. T., Muralidhar, S., Savla, J. J., Hill, J. A., Wang, Z., Ahmed, M. S., Hubbi, M., Menendez-Montes, I., et al
  LIPPINCOTT WILLIAMS & WILKINS.2020

- **Uncovering The Unique Functions And Regulation Of The Palmitoylated Calcineurin Isoform, CN beta 1**
  Ulengin-Talkish, I., Bond, R., St-Denis, N., Gingras, A., Shih, A., Conibear, E., Balla, T., Varnai, P., Cyert, M.
  WILEY.2020

- **Systematic discovery of Short Linear Motifs decodes calcineurin phosphatase signaling**
  Wigington, C. P., Roy, J., et al
  Molecular Cell.
  2020

- **Identifying New Substrates and Functions for an Old Enzyme: Calcineurin.** *Cold Spring Harbor perspectives in biology*
  Roy, J., Cyert, M. S.
  2019

- **Quantitative mapping of protein-peptide affinity landscapes using spectrally encoded beads.** *eLife*
  Nguyen, H. Q., Roy, J., Harink, B., Damle, N. P., Latorraca, N. R., Baxter, B. C., Brower, K., Longwell, S. A., Kortemme, T., Thorn, K. S., Cyert, M. S., Fordyce, P. M.
  2019; 8

- **The unique C terminus of the calcineurin isoform CNA beta 1 confers non-canonical regulation of enzyme activity by Ca2+ and calmodulin** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Bond, R., Ly, N., Cyert, M. S.
  2017; 292 (40): 16709–21

- **Short linear motifs - ex nihilo evolution of protein regulation** *CELL COMMUNICATION AND SIGNALING*
  Davey, N. E., Cyert, M. S., Moses, A. M.
  2015; 13

- **MRBLE-pep Measurements Reveal Accurate Binding Affinities for B56, a PP2A Regulatory Subunit.** *ACS measurement science Au*
  Hein, J. B., Cyert, M. S., Fordyce, P. M.
  2021; 1 (2): 56-64

- **Cell Biology: Deciphering the ABCs of SLiMs inG1-CDK Signaling.** *Current biology : CB*
  Roy, J., Cyert, M. S.
  2020; 30 (22): R1382–R1385

- **Protocol for Peptide Synthesis on Spectrally Encoded Beads for MRBLE-pep Assays** *BIO-PROTOCOL*
  Hein, J. B., Nguyen, H. Q., Cyert, M., Fordyce, P. M.
  2020; 10 (13)

- **Protocol for Peptide Synthesis on Spectrally Encoded Beads for MRBLE-pep Assays.** *Bio-protocol*
  Hein, J. B., Nguyen, H. Q., Cyert, M., Fordyce, P. M.
  2020; 10 (13): e3669

- **Uncovering Novel Substrates and Functions for the Calcineurin Phosphatase in Human Cells**
  Wigington, C. P., Roy, J., Damle, N. P., El Cho, S., Davey, N., Ivarsson, Y., Wong, C., Gingras, A., Cyert, M. S.
  FEDERATION AMER SOC EXP BIOL.2017

- **-dependent phosphatase, regulates Rga2, a Cdc42 GTPase-activating protein, to modulate pheromone signaling.** *Molecular biology of the cell*
  Ly, N., Cyert, M. S.
  2017; 28 (5): 576-586

- **Calcineurin, the Ca2+-dependent phosphatase, regulates Rga2, a Cdc42 GTPase-activating protein, to modulate pheromone signaling** *MOLECULAR BIOLOGY OF THE CELL*
  Ly, N., Cyert, M. S.
  2017; 28 (5): 576-586

- **Using Yeast to Determine the Functional Consequences of Mutations in the Human p53 Tumor Suppressor Gene: An Introductory Course-Based Undergraduate Research Experience in Molecular and Cell Biology** *BIOCHEMISTRY AND MOLECULAR BIOLOGY EDUCATION*
  Hekmat-Scafe, D. S., Brownell, S. E., Seawell, P. C., Malladi, S., Imam, J. F., Singla, V., Bradon, N., Cyert, M. S., Stearns, T.
  2017; 45 (2): 161-178

- **Using yeast to determine the functional consequences of mutations in the human p53 tumor suppressor gene: An introductory course-based undergraduate research experience in molecular and cell biology.** *Biochemistry and molecular biology education*
  Hekmat-Scafe, D. S., Brownell, S. E., Seawell, P. C., Malladi, S., Imam, J. F., Singla, V., Bradon, N., Cyert, M. S., Stearns, T.
  2016

- **Hcm1 integrates signals from Cdk1 and calcineurin to control cell proliferation** *MOLECULAR BIOLOGY OF THE CELL*
  Arsenault, H. E., Roy, J., Mapa, C. E., Cyert, M. S., Benanti, J. A.
  2015; 26 (20): 3570-3577

- **A high-enrollment course-based undergraduate research experience improves student conceptions of scientific thinking and ability to interpret data.** *CBE life sciences education*
  Brownell, S. E., Hekmat-Scafe, D. S., Singla, V., Chandler Seawell, P., Conklin Imam, J. F., Eddy, S. L., Stearns, T., Cyert, M. S.
  2015; 14 (2)

- **A High-Enrollment Course-Based Undergraduate Research Experience Improves Student Conceptions of Scientific Thinking and Ability to Interpret Data** *CBE-LIFE SCIENCES EDUCATION*
  Brownell, S. E., Hekmat-Scafe, D. S., Singla, V., Seawell, P. C., Imam, J. F., Eddy, S. L., Stearns, T., Cyert, M. S.
  2015; 14 (2)

- **Calcineurin regulates the yeast synaptojanin Inp53/Sjl3 during membrane stress.** *Molecular biology of the cell*
  Guiney, E. L., Goldman, A. R., Elias, J. E., Cyert, M. S.
  2015; 26 (4): 769-785

- **The Calcineurin Signaling Network Evolves via Conserved Kinase-Phosphatase Modules that Transcend Substrate Identity.** *Molecular cell*
  Goldman, A., Roy, J., Bodenmiller, B., Wanka, S., Landry, C. R., Aebersold, R., Cyert, M. S.
  2014; 55 (3): 422-435

- **Specific alpha-Arrestins Negatively Regulate Saccharomyces cerevisiae Pheromone Response by Down-Modulating the G-Protein-Coupled Receptor Ste2** *MOLECULAR AND CELLULAR BIOLOGY*
  Alvaro, C. G., O'Donnell, A. F., Prosser, D. C., Augustine, A. A., Goldman, A., Brodsky, J. L., Cyert, M. S., Wendland, B., Thorner, J.

2014; 34 (14): 2660-2681

- **The calcineurin signaling network evolves via conserved kinase-phosphatase modules that transcend substrate identity**
  Cyert, M., Goldman, A., Roy, J., Bodenmiller, B., Wanka, S., Landry, C., Aebersold, R.
  FEDERATION AMER SOC EXP BIOL.2014
- **Whi3, an S. cerevisiae RNA-Binding Protein, Is a Component of Stress Granules That Regulates Levels of Its Target mRNAs** *PLOS ONE*
  Holmes, K. J., Klass, D. M., Guiney, E. L., Cyert, M. S.
  2013; 8 (12)
- **A Calcineurin-dependent Switch Controls the Trafficking Function of a-Arrestin Aly1/Art6.** *journal of biological chemistry*
  O'Donnell, A. F., Huang, L., Thorner, J., Cyert, M. S.
  2013; 288 (33): 24063-24080
- **Regulation of Cation Balance in Saccharomyces cerevisiae** *GENETICS*
  Cyert, M. S., Philpott, C. C.
  2013; 193 (3): 677-713
- **The Molecular Mechanism of Substrate Engagement and Immunosuppressant Inhibition of Calcineurin** *PLOS BIOLOGY*
  Grigoriu, S., Bond, R., Cossio, P., Chen, J. A., Ly, N., Hummer, G., Page, R., Cyert, M. S., Peti, W.
  2013; 11 (2)
- **Whi3, an S. cerevisiae RNA-binding protein, is a component of stress granules that regulates levels of its target mRNAs.** *PloS one*
  Holmes, K. J., Klass, D. M., Guiney, E. L., Cyert, M. S.
  2013; 8 (12)
- **Curcumin Inhibits Growth of Saccharomyces cerevisiae through Iron Chelation** *EUKARYOTIC CELL*
  Minear, S., O'Donnell, A. F., Ballew, A., Giaever, G., Nislow, C., Stearns, T., Cyert, M. S.
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- **Hph1 and Hph2 Are Novel Components of the Sec63/Sec62 Posttranslational Translocation Complex That Aid in Vacuolar Proton ATPase Biogenesis** *EUKARYOTIC CELL*
  Pina, F. J., O'Donnell, A. F., Pagant, S., Piao, H. L., Miller, J. P., Fields, S., Miller, E. A., Cyert, M. S.
  2011; 10 (1): 63-71
- **alpha-Arrestins Aly1 and Aly2 Regulate Intracellular Trafficking in Response to Nutrient Signaling** *MOLECULAR BIOLOGY OF THE CELL*
  O'Donnell, A. F., Apffel, A., Gardner, R. G., Cyert, M. S.
  2010; 21 (20): 3552-3566
- **Cracking the Phosphatase Code: Docking Interactions Determine Substrate Specificity** *SCIENCE SIGNALING*
  Roy, J., Cyert, M. S.
  2009; 2 (100)
- **A Conserved Docking Surface on Calcineurin Mediates Interaction with Substrates and Immunosuppressants** *MOLECULAR CELL*
  Rodriguez, A., Roy, J., Martinez-Martinez, S., Lopez-Maderuelo, M. D., Nino-Moreno, P., Orti, L., Pantoja-Uceda, D., Pineda-Lucena, A., Cyert, M. S., Redondo, J. M.
  2009; 33 (5): 616-626
- **Renaming the DSCR1/Adapt78 gene family as RCAN: regulators of calcineurin** *FASEB JOURNAL*
  Davies, K. J., Ermak, G., Rothermel, B. A., Pritchard, M., Heitman, J., Ahnn, J., Henrique-Silva, F., Crawford, D., Canaider, S., Strippoli, P., Carinci, P., Min, K., Fox, et al
  2007; 21 (12): 3023-3028
- **A conserved docking site modulates substrate affinity for calcineurin, signaling output, and in vivo function** *MOLECULAR CELL*
  Roy, J., Li, H., Hogan, P. G., Cyert, M. S.
  2007; 25 (6): 889-901
- **Slm1 and Slm2 are novel substrates of the calcineurin phosphatase required for heat stress-induced endocytosis of the yeast uracil permease** *MOLECULAR AND CELLULAR BIOLOGY*
  Bultynck, G., Heath, V. L., Majeed, A. P., Galan, J., Haguenauer-Tsapis, R., Cyert, M. S.
  2006; 26 (12): 4729-4745

- **Mapping protein kinase networks in yeast by systematic gene overexpression** *Experimental Biology 2006 Annual Meeting*
  Andrews, B. J., Sopko, R., Huang, D. Q., Preston, N., Chua, G., Papp, B., Kafadar, K., Snyder, M., Oliver, S., Cyert, M., Hughes, T., Boone, C.
  FEDERATION AMER SOC EXP BIOL.2006: A1308–A1308

- **Mapping pathways and phenotypes by systematic gene overexpression** *MOLECULAR CELL*
  Sopko, R., Huang, D. Q., Preston, N., Chua, G., Papp, B., Kafadar, K., Snyder, M., Oliver, S. G., Cyert, M., Hughes, T. R., Boone, C., Andrews, B.
  2006; 21 (3): 319-330

- **Genomic and proteomic comparisons between bacterial and archaeal genomes and related comparisons with the yeast and fly genomes** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Karlin, S., Brocchieri, L., Campbell, A., Cyert, M., Mrazek, J.
  2005; 102 (20): 7309-7314

- **Molecular analysis reveals localization of Saccharomyces cerevisiae protein kinase C to sites of polarized growth and Pkc1p targeting to the nucleus and mitotic spindle** *EUKARYOTIC CELL*
  Denis, V., Cyert, M. S.
  2005; 4 (1): 36-45

- **Integration of stress responses: Modulation of calcineurin signaling in Saccharomyces cerevisiae by protein kinase A** *EUKARYOTIC CELL*
  Kafadar, K. A., Cyert, M. S.
  2004; 3 (5): 1147-1153

- **Hph1p and Hph2p, novel components of calcineurin-mediated stress responses in Saccharomyces cerevisiae** *EUKARYOTIC CELL*
  Heath, V. L., Shaw, S. L., Roy, S., Cyert, M. S.
  2004; 3 (3): 695-704

- **Calcineurin signaling in Saccharomyces cereviside: how yeast go crazy in response to stress** *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS*
  Cyert, M. S.
  2003; 311 (4): 1143-1150

- **Negative regulation of calcineurin signaling by Hrr25p, a yeast homolog of casein kinase I** *GENES & DEVELOPMENT*
  Kafadar, K. A., Zhu, H., Snyder, M., Cyert, M. S.
  2003; 17 (21): 2698-2708

- **Identification and characterization of novel calcineurin substrates.**
  Heath, V. L., Burrows-Brown, N., Cyert, M. S.
  JOHN WILEY & SONS LTD.2003: S196

- **Genome-wide analysis of gene expression regulated by the calcineurin/Crz1p signaling pathway in Saccharomyces cerevisiae** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Yoshimoto, H., Saltsman, K., Gasch, A. P., Li, H. X., Ogawa, N., Botstein, D., Brown, P. O., Cyert, M. S.
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- **Calcineurin-dependent regulation of Crz1p nuclear export requires Msn5p and a conserved calcineurin docking site** *GENES & DEVELOPMENT*
  Boustany, L. M., Cyert, M. S.
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- **Internal Ca2+ release in yeast is triggered by hypertonic shock and mediated by a TRP channel homologue** *JOURNAL OF CELL BIOLOGY*
  Denis, V., Cyert, M. S.
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- **Calcineurin-dependent nuclear import of the transcription factor Crz1p requires Nmd5p** *JOURNAL OF CELL BIOLOGY*
  Polizotto, R. S., Cyert, M. S.
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- **The eukaryotic response regulator Skn7p regulates calcineurin signaling through stabilization of Crz1p** *EMBO JOURNAL*
  Williams, K. E., Cyert, M. S.
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- **Regulation of nuclear localization during signaling** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Cyert, M. S.
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- **Genetic analysis of calmodulin and its targets in Saccharomyces cerevisiae** *ANNUAL REVIEW OF GENETICS*
  Cyert, M. S.
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- **Skn7, a response-regulator, regulates calcineurin dependent transcription through Crz1 transcription factor stability**
  Williams, K. E., Cyert, M. S.
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- **Luv1p/Rki1p/Tcs3p/Vps54p, a yeast protein that localizes to the late Golgi and early endosome, is required for normal vacuolar morphology.** *MOLECULAR BIOLOGY OF THE CELL*
  Conboy, M. J., Cyert, M. S.
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- **Identification of a novel region critical for calcineurin function in vivo and in vitro** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Jiang, B., Cyert, M. S.
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- **Yeast calcineurin regulates nuclear localization of the Crz1p transcription factor through dephosphorylation** *GENES & DEVELOPMENT*
  Stathopoulos-Gerontides, A., Guo, J. J., Cyert, M. S.
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- **Luv1, a novel yeast protein required for vacuole biogenesis**
  Conboy, M. J., Cyert, M. S.
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- **Calcineurin-dependent regulation of Crz1p phosphorylation and nuclear translocation.**
  Polizotto, R. S., Stathopoulos, A. M., Cyert, M. S.
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- **Importance of phenylalanine residues of yeast calmodulin for target binding and activations** *JOURNAL OF BIOLOGICAL CHEMISTRY*
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  Withee, J. L., Sen, R., Cyert, M. S.
  1998; 149 (2): 865-878
- **Temperature-induced expression of yeast FKS2 is under the dual control of protein kinase C and calcineurin** *MOLECULAR AND CELLULAR BIOLOGY*
  Zhao, C., Jung, U. S., Garrett-Engele, P., Roe, T., Cyert, M. S., Levin, D. E.
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  Stathopoulos, A. M., Cyert, M. S.
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  Withee, J. L., Mulholland, J., Jeng, R., Cyert, M. S.
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- **The product of HUM1, a novel yeast gene, is required for vacuolar Ca2+/H+ exchange and is related to mammalian Na+/Ca2+ exchangers** *MOLECULAR AND CELLULAR BIOLOGY*
  Pozos, T. C., Sekler, I., Cyert, M. S.
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- **Two classes of plant cDNA clones differentially complement yeast calcineurin mutants and increase salt tolerance of wild-type yeast** *JOURNAL OF BIOLOGICAL CHEMISTRY*

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  GARRETTENGELE, P., Moilanen, B., Cyert, M. S.
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