

Mary Fedarko Roberts

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Education:

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|---------------------------------------|----------|-----------|--------------|
| Bryn Mawr College, Bryn Mawr PA | A.B. | 1969 | Chemistry |
| Stanford University, Stanford CA | Ph.D. | 1974 | Chemistry |
| University of Illinois, Urbana IL | Post-doc | 1974-1975 | Biochemistry |
| University of California, La Jolla CA | Post-doc | 1975-1978 | Biochemistry |

Academic Positions:

1978-1983 Assistant Professor, Chem. Dept., Massachusetts Institute of Technology
1983-1986 Associate Professor, Chem. Dept, Massachusetts Institute of Technology
1986-1987 Staff Scientist, Francis Bitter National Magnet Laboratory, M.I.T.
1987-1990 Visiting Scientist, Francis Bitter National Magnet Laboratory, M.I.T.
1987-1991 Associate Professor, Department of Chemistry, Boston College
1991-present Professor, Department of Chemistry, Boston College
1993-1999 Chair, Chemistry Graduate Admissions, Boston College
2002-2006 Vice-Chair, Department of Chemistry, Boston College
2002-2015 Visiting Scientist, Department of Biochemistry, Brandeis University
2017- Professor Emerita, Boston College

Awards/Honors:

Boston College Distinguished Senior Research Award 2008
AAAS Fellow (elected 2007)
N.S.F. Faculty Award for Women 11/91-4/97
Alfred P. Sloan Fellow, 1982-1984
Dreyfus Teacher / Scholar, 1980

Professional Activities:

Member of Biophysical Chemistry (BBCB) Study Section, N.I.H., 1984-1987
Member of Biophysics Panel, N.S.F., 1989-1992
Member of CRUI Panel, N.S.F., 1994-1996
Scientific Advisory Committee, Cancer Fund of the Damon Runyon-Walter Winchell Foundation, 1993-1997
Biophysical Society Council Member, 1994-1997
Advisory Board, FASEB Summer Research Conference on Phospholipases
Member of Physiological Chemistry (PC) Study Section, N.I.H., 2000-2004

Chair, PC Study Section, N.I.H., 2002-2004
DOE Biosciences Review Panel, 2000; 2012; BES Early Career Review 2009
Editorial Board Member, *Journal of Biological Chemistry*, 2003-2007
Ad hoc member, N.I.H. Protein Structure Initiative special emphasis panel, 2005
Member of Biomembranes (BBM) Study Section, 2005-2009; Chair 2007-2009
Editorial Board, *Biochemical Journal*, 2009-2017
ASBMB Chair of the 2015 Annual Meeting in Boston

PUBLICATIONS:

249. Roberts, M.F., Khan, H.M., Goldstein, R., Reuter, N., and Gershenson, A. (2018) Search and subvert: minimalist bacterial phosphatidylinositol-specific phospholipase C (PI-PLC) enzymes. *Chem. Rev.*, *in press*.
248. Rosenberg, M.M., Redfield, A.G., Roberts, M.F., and Hedstrom, L. (2018) Dynamic characteristics of guanosine-5'-monophosphate reductase complexes revealed by high resolution ³¹P field-cycling NMR relaxometry. *Biochemistry* **57**, 3146-3154.
247. Roberts, M.F. (2018) High-resolution applications of shuttle field-cycling NMR. Chapter 15 in *Field Cycling NMR Relaxometry: Instrumentation, Model Theories and Applications* (R. Kimich, editor), Royal Society Press.
246. Roberts, M.F. (2017) Defining a viral membrane-binding complex on an atomic level. *Structure* **25**, 3-4.
245. Gradziel, C.S., Jordan, P.A., Jewel, D., Dufort, F.J., Miller, S.J., Chiles, T.C., and Roberts M.F. (2016) D-3-Deoxy-dioctanoylphosphatidylinositol induces cytotoxicity in human MCF-7 breast cancer cells via a mechanism that involves downregulation of the D-type cyclin-retinoblastoma pathway. *Biochim. Biophys. Acta* **1861**, 1808-1815.
244. Rosenberg, M.M., Redfield, A.G., Roberts, M.F., and Hedstrom, L. (2016) Substrate and cofactor dynamics on guanosine monophosphate reductase probed by high resolution field cycling ³¹P NMR relaxometry. *J. Biol. Chem.* **291**, 22988-22998.
243. Huang, Q., Gershenson, A., and Roberts, M.F. (2016) Recombinant broad-range phospholipase C from *Listeria monocytogenes* exhibits optimal activity at acidic pH. *Biochim. Biophys. Acta* **1864**, 697-705.
242. Khan, H.M., He, T., Fuglebakk, E., Grauffel, C., Yang, B., Roberts, M.F., Gershenson, A., and Reuter, N. (2016) A role for weak electrostatic interactions in peripheral membrane protein binding. *Biophys. J.* **110**, 1367-1378.
241. He, T., Gershenson, A., Eyles, S.J., Lee, Y.-J., Liu, W. R., Wang, J., Gao, J., and Roberts, M. F. (2015) Fluorinated aromatic amino acids distinguish cation- π interactions from membrane insertion. *J. Biol. Chem.* **290**, 19334-19342.
240. Mitchell, G., Ge, L., Huang, Q., Chen, C., Kianian, S., Roberts, M.F., Schekman, R., and Portnoy, D.A. (2015) Avoidance of autophagy mediated by PlcA or ActA is required for *Listeria monocytogenes* growth in macrophages. *Infect. Immun.* **83**, 2175-2184.
239. Wei, Y., Stec, B., Redfield, A.G., Weerapana, E., and Roberts, M.F. (2015) Phospholipid binding sites of PTEN: Exploring the mechanism of PIP₂ activation. *J. Biol. Chem.* **290**, 1592-1606.
238. Yang, B., Pu, M., Khan, H., Friedman, L., Reuter, N., Roberts, M.F., and Gershenson, A. (2015) Quantifying transient interactions between *Bacillus* phosphatidylinositol-specific phospholipase C and phosphatidylcholine-rich vesicles. *J. Am. Chem. Soc.* **137**, 14-17.

237. Meidenbauer, J.J., and Roberts, M.F. (2014) Reduced glucose utilization underlies seizure protection with dietary therapy in epileptic EL mice. *Epilepsy & Behavior* **39**, 48-54.
236. Gradziel, C.S., Wang, Y., Stec, B., Redfield, A.G., and Roberts, M.F. (2014) Cytotoxic amphiphiles and phosphoinositides bind to two discrete sites on the Akt1 PH domain. *Biochemistry* **53**, 462-472.
235. Cai, J., Guo, S., Lomasney, J.W., and Roberts, M.F. (2013) Ca²⁺-independent binding of anionic phospholipids by phospholipase C δ 1 EF-hand domain. *J. Biol. Chem.* **288**, 37277-37288.
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233. Cheng, J., Goldstein, R., Gershenson, A., Stec, B., and Roberts, M.F. (2013) The cation- π box is a specific phosphatidylcholine membrane targeting motif. *J. Biol. Chem.* **288**, 14863-14873.
232. Grauffel, C., Yang, B., He, B., Roberts, M.F., Gershenson, A., and Reuter, N. (2013) Cation- π interactions as lipid-specific anchors for phosphatidylinositol-specific phospholipase C. *J. Am. Chem. Soc.* **135**, 5740-5750.
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223. Wang, Q., Wei, Y., Roberts, M.F., and Krilov, G. (2010) Understanding the stereospecific interactions of 3-deoxyphosphatidylinositol derivatives with the PTEN phosphatase domain. *J. Molec. Graphics Model.* **29**, 102-114.

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209. Wang, Y.K., Stieglitz, K.A., Bubunencko, M., Court, D.L., Stec, B., and Roberts, M.F. (2007) The structure of the R184A mutant of the inositol monophosphatase encoded by *suH*B and implications for its functional interactions in *E. coli*. *J. Biol. Chem.* **282**, 26989-26996.

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206. Rodionov, D.A., Kurnasov, O.V., Stec, B., Wang, Y., Roberts, M.F., and Osterman, A (2007) Genomic identification and in vitro reconstitution of a complete biosynthetic pathway for the osmolyte di-myo-inositol phosphate. *Proc. Natl. Acad. Sci. U.S.A.* **104**, 4279-4284.
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203. Doughty, C.A., Bleiman, B.F., Wagner, D.J., Dufort, F.J., Mataraza, J.M., Roberts, M.F., and Chiles, T.C. (2006) Receptor-mediated changes in glucose metabolism in B lymphocytes: Role of phosphatidylinositol-3-kinase signaling in the glycolytic control of growth. *Blood* **107**, 4458-4465.
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194. Stieglitz, K., Yang, H., Roberts, M.F., and Stec, B. (2005) Reaching for mechanistic consensus across kingdoms: Structure and insights into catalysis of the inositol-1-phosphate synthase (mIPS) from *Archaeoglobus fulgidus*. *Biochemistry* **44**, 213-224.
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