



**D. Marshall Porterfield**  
Ph.D. Louisiana State University - 1996

**Professor**

Distinguished Alumni Award, University of South Alabama – 2014  
President, Institute for Biological Engineering – 2013  
Appointed to the National Science and Technology Council as the NASA representative on the Life Sciences Subcommittee. Executive Office of the President, Office of Science and Technology Policy - 2012  
Elected to College of Fellows for the American Institute for Medical and Biological Engineering – 2012  
President, American Society for Gravitational and Space Biology - 2010

**Research Areas:**

Biosensors. Self-referencing biosensors. Lab-on-a-chip MEMS devices for cell sensing. Biomimetic sensors for environmental monitoring Bio-nanotechnology. Signaling systems in animal and plant cells. Bioregenerative Life Support. Plant responses to spaceflight. Nutrient delivery systems for use in microgravity.

**Selected Publications (last 4 years):**

- Stensberg, M.C., Madangopal, R., Yale, G., Wei, Q., Ochoa-Acuna, H., Wei, A., McLamore, E.S., Rickus, J.L., Porterfield, D.M., Sepulveda, M. 2014. Silver nanoparticle-specific mitotoxicity in *Daphnia magna*. *Nanotoxicity*. 8: 833-842.
- Zhang, W., McLamore, E.S., Wu, R., Stensberg, M.C., Porterfield, D.M., Banks, M.K. 2014. Glutathione-Gated Potassium Efflux as a Mechanism of Active Biofilm Detachment. *Water Environment Research*. 86: 462-469
- Stensberg, M.C., Zeitchek, M.A., Inn, K., McLamore, E.S., Porterfield, D.M., Sepúlveda, M.S. 2014. Comparative study of non-invasive methods for assessing *Daphnia magna* embryo toxicity. *Environmental Science and Pollution Research International*. 18: 10803-10814
- Liu, G., Porterfield, D.M., 2014. Oxygen enrichment with magnesium peroxide for minimizing hypoxic stress of flooded corn. *Journal of Plant Nutrition and Soil Science*. DOI: 10.1002/jpln.201300424
- Kang, Z., Yan, X., Zhang, Y., Pan, J., Shi, J., Zhang, X., Liu, Y., Choi, J.H., Porterfield, D.M., 2014. Single-Stranded DNA Functionalized Single-Walled Carbon Nanotubes for Microbiosensors via Layer-by-Layer Electrostatic Self-Assembly. *ACS Applied Materials & Interfaces* 6: 3784-3789.
- Zheng, W., Tayyari, F., Gowda, G.A.N., Raftery, D., McLamore, E.S., Porterfield, D.M., Donkin, S.S., Bequette, B., Teegarden, D. 2013. Altered glucose metabolism in Harvey-ras transformed MCF10A cells. *Molecular Carcinogenesis*. DOI: 10.1002/mc.22079.
- Jaroch, D., Lu, J., Madangopal, R., Stull, N., Stensberg, M., Shi, J., Kahn, J., Herrera-Perez, R., Zeitchek, M., Sturgis, J., Robinson, J.P., Yoder, M., Porterfield, D.M., Mirmira, R., Rickus, J.L. 2013. Mouse and Human Islets Survive and Function After Coating by Biosilicification. *American Journal of Physiology: Endocrinology and Metabolism*. 305: E1230-E1240
- Wan Salim, W.W., Zeitchek, M.A., Hermann, A.C., Ricco, A.J., Tan, M., Selch, F., Fleming, E., Bebout, B.M., Bader, M.M., Ul Haque, A., Porterfield, D.M. Multi-analyte biochip (MAB) based on all-solid-state ion-selective electrodes (ASSISE) for physiological research. *Journal of Visual Experimentation*. 74: e50020.
- Zheng, W., Tayyari, F., Nagana Gowda, G.A., Raftery, D., McLamore, E.S., Shi, J., Porterfield, D.M., Donkin, S.S., Bequette, B., Teegarden, D. 2013. 1,25-Dihydroxyvitamin D regulation of glucose metabolism in Harvey-ras transformed MCF10A human breast epithelial cells. *The Journal of Steroid Biochemistry and Molecular Biology*. 138: 81–89
- Subraya, K.K., Diggs, A., Porterfield, D.M. 2013. Amperometric Biosensor Approaches for Quantification of Indole 3-Acetic Acid in Plant Stress Responses. *Communications in Soil Science and Plant analysis*. 44: 1749-1763
- Shi, J., McLamore, E.S., Porterfield, D.M. 2013. Nanomaterial Based Self-referencing Microbiosensors for Cell and Tissue Physiology Research. *Biosensors and Bioelectronics*, 15: 127-134.
- Bushart, T.J., Cannon, A.E., ul Haque, A., San Miguel, P., Mostajeran, K., Clark, G.B., Porterfield, D.M., Roux, S.J. 2013. RNA-seq analysis identifies potential modulators of gravity response in spores of *Ceratopteris* (Parkeriaceae): Evidence for modulation by calcium pumps and apyrase activity. *American Journal of Botany*. 100: 161-174
- Shi, J., Zhang, H., Snyder, A., Wang, M., Xie, J., Porterfield, D.M., Stanciu, L.A. 2012. An aqueous media based approach for the preparation of a biosensor platform composed of graphene oxide and Pt-black. *Biosensors and Bioelectronics*. 38: 314–320
- Claussen, J.C., Kumar, A., Jaroch, D.B., Khawaja, M.H., Hibbard, A.B., Porterfield, D.M., Fisher, T.S. 2012. Biosensors: Nanostructuring Platinum Nanoparticles on Multilayered Graphene Petal Nanosheets for Electrochemical Biosensing. *Advanced Functional Materials* 22: 3399-3405.
- Guodong, L., Porterfield, D.M., Li, Y., Klassen, W. 2012. Increased Oxygen Bioavailability Improved Vigor and Germination of Aged Vegetable Seeds. *HortScience*. 47: 1714-1721.
- Li, F., Porterfield, D.M., Zheng, X., Wang, W., Xu, Y., Zhang, Z. 2012. Abnormal mitochondrial function impairs calcium influx in diabetic mouse pancreatic beta cells. *Chinese Medical Journal* 125: 502-510.
- Liu, G., Li, Y., Alva, A.K., Porterfield, D.M., Dunlop, J. 2012. Enhancing nitrogen use efficiency of potato and cereal crops by optimizing temperature, moisture, balanced nutrition and oxygen bioavailability. *Journal of Plant Nutrition*. 33: 428-441.
- Sun, X., McLamore, E.S., Kishorec, V., Fitesa, K., Slipchenkoa, M., Porterfield, D.M., Akkus, O. 2012. Mechanical Stretch Induced Calcium Efflux from Bone Matrix Stimulates Osteoblasts. *Bone* 50: 581-591
- Claussen, J.C., Hengenius, J.B., Wickner, M.W., Fisher, T.S., Umulis, D.M., Porterfield, D.M. 2011. Effects of carbon nanotube-tethered nanosphere density on amperometric biosensing: simulation and experiment. *Journal of Physical Chemistry C*. 115: 20896-20904
- Shi, J., Claussen, J.C., McLamore, E.S., ul Haque, A., Jaroch, D., Diggs, A.R., Calvo-Marzal, P., Rickus, J.L., Porterfield, D.M. 2011. A comparative study of enzyme immobilization strategies for multi-walled carbon nanotube glucose biosensors. *Nanotechnology*. 22: 355502
- Shi, J., Cha, T.G., Claussen, J.C., Diggs, A.R., Choi, J.H., Porterfield, D.M. 2011. microbiosensors based on DNA modified single-walled carbon nanotube and Pt black nanocomposites. *Analyst*. 136: 4916-4924