

Martha S. Field, Ph.D.
Assistant Professor
Division of Nutritional Sciences
Cornell University
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Education

Bachelor of Science in Chemistry 2000
Butler University, Indianapolis, IN

Ph.D. in Biochemistry, Molecular and Cell Biology 2007
Cornell University, Ithaca, NY
Thesis Adviser: Patrick Stover

Postdoctoral Training

Postdoctoral Research Associate 2007-2009
Cornell University, Ithaca, NY
Mentor: Patrick Stover

Academic Appointments and Research Activities

Lecturer 2015-2018
Division of Nutritional Sciences, Cornell University, Ithaca, NY

Research Associate 2010-2016
Division of Nutritional Sciences, Cornell University, Ithaca, NY

Senior Research Associate 2016-June 2018
Division of Nutritional Sciences, Cornell University, Ithaca, NY

Assistant Professor July 2018 - present
Division of Nutritional Sciences, Cornell University, Ithaca, NY

Other Appointments

Department Safety Representative 2014-2018
Served as the university's primary contact and coordinator for laboratory safety issues (including use of biohazardous and radioactive materials) in the Division of Nutritional Sciences at Cornell University

Professional Development and Training

- Cornell Faculty Leadership Development Program, 2018
- WHO/Cochrane Institute, Cornell University, 2014
- Cornell Center for Technology Enterprise and Commercialization: Pre-Seed Workshop, Cornell University, 2013
- Effective Interactions in Organizations Workshop, Cornell University, 2006
- Trained in handling/use of radioactive materials, Cornell University, 2006
- Mouse handling and husbandry training, Cornell University, 2007
- Trained in handling/use of biohazardous materials, Cornell University, 2000

Scientific and Professional Societies

- American Society for Nutrition (ASN), 2013-present
- American Society for Biochemistry and Molecular Biology (ASBMB), 2012-present
- The American Association for the Advancement of Science (AAAS), 2012-present

Professional Service

- NIH *Ad hoc* reviewer for NMHD study section, November 2023
- Member of ASN Membership Committee, 2022-present
- Member of ASN Nutrition 2023 Scientific Program planning group, 2023
- Mentor for ASN Early Career Nutrition (ECN) pilot mentoring program, 2021
- Member of NASEM Committee on Evaluating the Process to Develop the Dietary Guidelines for Americans (2020-2025), 2021-2022
- President of ASN Vitamin and Minerals Research Interest Group, 2021-2023
- NIH Early Career Reviewer, POMD study section, February 2021
- Member of NASEM Committee on Scanning for New Evidence on Riboflavin to Support a Dietary Reference Intake Review, 2020-2021
- Cornell University Faculty Senate Representative for the Division of Nutritional Sciences, 2019-present
- Member of the Cornell University Radiation Safety Committee, Dec 2018-present
- Member of American Society for Nutrition Committee on Advocacy and Science Policy, July 2018-June 2021
- External Review Committee Member for Sackler Institute at the New York Academy of Sciences, September 2017
- Reviewer for the 2016 USDA/ODS John A. Milner fellowship program

Meetings Organized

- Co-organizer for Fifth International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, Ionnina, Greece, 2024
- Co-organizer for Fourth International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, Ionnina, Greece, 2023
- Co-organizer for Third International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, Crete, Greece, 2022
- Co-organizer for Second International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, Rhodes, Greece, 2021

- Co-organizer for Precision Nutrition Cornell Intercampus Symposium, 2019
- Co-organizer for First International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, Chania, Crete, Greece, 2018

Invited Seminars

- “The roles of folate and vitamin B12 in maintaining mitochondrial DNA integrity and mitochondrial function,” FASEB B Vitamins and One-Carbon Metabolism Meeting, Niagara Falls, NY, August 2024
- “Folate and vitamin B12 interactions impact mitochondrial genome stability and mitochondrial function,” Fifth International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, Ionnina, Greece, June 2024
- “The role of vitamin B12 in supporting skeletal muscle mitochondrial genome integrity and mitochondrial function,” Paul F. Glenn/AFAR Conference on the Biology of Aging, May 2024
- “The roles of folate and vitamin B12 in maintaining mitochondrial DNA integrity and mitochondrial function,” American Society for Biochemistry and Molecular Biology (ASBMB) annual meeting, March 2024
- “Leveraging animal model literature to optimize maternal nutrient exposures,” Cochrane India Nutrition Evidence Synthesis for Biomarker Discovery Symposium, New Delhi, India, March 2024
- “Role of systematic reviews in the DRI process: riboflavin case study,” Artificial Intelligence and Machine Learning in Evidence Synthesis and Evidence Generation in Food and Nutrition Symposium, National Academy of Sciences, Engineering and Medicine, Washington D.C., February 2024
- “Nutrition and Epigenetics,” NYU Langone Dietary and Lifestyle Strategies for Cardiovascular Risk Reduction” course, New York, NY, October 2023
- “Molecular mechanisms linking impaired mitochondrial folate metabolism to mitochondrial DNA instability and impaired mitochondrial function,” Fourth International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, Ionnina, Greece, June 2023
- “Mechanisms underlying association between elevated plasma erythritol and disease onset,” Institute for the Advancement of Food and Nutrition Sciences, webinar, March 2023
- “Uracil accumulation in mitochondrial DNA impairs oxidative phosphorylation,” Third International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, Crete, Greece, 2022
- “Nutrition in Extreme Conditions—Why it Matters!” NASA Human Health and Performance Retreat, 2022
- “The roles of folate and vitamin B12 in maintenance of mitochondrial DNA integrity and mitochondrial function,” Origins of Child Health and Disease (OCHaD) Seminar, British Columbia Children's Hospital Research Institute, 2022
- “The role of B vitamins in maintenance of mitochondrial DNA integrity,” Second International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, Rhodes, Greece, 2021

- “Insights into genetic and nutritional determinants of uracil accumulation in mitochondrial DNA,” 13th International Conference on One-Carbon Metabolism, B Vitamins and Homocysteine, Poznan, Poland, 2021
- “Metabolic determinants of elevated plasma erythritol, a predictive biomarker of chronic disease onset,” Texas A&M University Department of Nutrition, 2021.
- “Wheat flour fortification with iron for reducing anaemia and improving iron status in populations,” WHO Guideline Development Group meeting: *Fortification of wheat flour with vitamins and minerals in public health*, 2020.
- “Metabolic causes and consequences of increased erythritol production from glucose,” Molecular Biology and Genetics Seminar, Cornell University, 2020.
- “Novel activities of two human dehydrogenase enzymes affect glucose metabolism in a variant-specific manner,” Precision Nutrition Cornell Intercampus Symposium, 2019.
- “Evidence for mechanistic interaction between excess folate/folic acid vitamin B₁₂ interactions--insights from human and animal data,” NIH Workshop on Metabolic Interaction between excess Folates/Folic acid and Vitamin B₁₂ deficiency, National Institutes of Health, 2019.
- “Gene-nutrient interactions that lead to disease—a focus on folate and the nervous system,” Burke Neurological Institute, 2019.
- “Endogenous production of erythritol and its association with weight gain in young adults,” Memorial Sloan Kettering Cancer Center, 2018.
- “Endogenous production of erythritol and its association with weight gain in young adults,” First International Conference on Precision Nutrition and Metabolism in Public Health and Medicine, Chania, Crete, Greece, 2018.
- “Blood-Brain Barrier Dysfunction and Resulting Brain Nutrient Deficiencies,” Examining Special Nutritional Requirements in Disease States: A Workshop. National Academy of Sciences, Washington D.C., 2018.
- “Systems approaches to understanding metabolism,” Nutrition Obesity Research Center Seminar Series, University of Alabama, Birmingham, 2018.
- “Identification of a novel biomarker of weight gain”, 13th China Nutrition Science Congress, Shanghai, China 2017
- “The effect of folate on vitamin B₁₂ depletion-induced inhibition of nuclear thymidylate biosynthesis and neural tube defects”, 11th International Conference on Homocysteine and One-Carbon Metabolism, Aarhus, Denmark, 2017
- “Systems Understanding of the One-Carbon Metabolism Network” Braunschweig Biological Lectures, University of Braunschweig, Braunschweig, Germany, 2017
- “Vitamin B12 deficiency perturbs nuclear one-carbon metabolism leading to genome instability,” 11th Structural Birth Defects Meeting, 2017.
- “Vitamin B12 deficiency perturbs nuclear one-carbon metabolism leading to genome instability,” Aging, Inflammation, Metabolism, and Stress Seminar Series, Cornell University, 2017.
- “Effects of dietary nucleotides on folate-mediated one-carbon metabolism,” Folate Receptor Meeting, 2016.

- “Defining B Vitamin Requirements in Non-Healthy People,” FASEB Summer Conference: Folic Acid, Vitamin B12 and One-Carbon Metabolism, 2016.
- “In search of a common pathway for folic acid-responsive neural tube defects, cancers and neurodegeneration” The Microsoft Research - University of Trento Centre for Computational and Systems Biology, Italy, 2016.
- “Determinants and consequences of uracil in DNA,” Aging, Inflammation, Metabolism, and Stress Seminar Series, Cornell University, 2015.
- “Biological mechanisms underlying the successes of folic acid fortification,” The Workshop: CRN’s Day of Science, Council for Responsible Nutrition, 2014
- “Determinants and consequences of uracil in DNA,” Division of Nutritional Sciences Field of Nutrition Seminar, Cornell University, 2014.
- “Determinants and physiological ramifications of uracil incorporation into DNA,” FASEB Summer Conference: Folic Acid, Vitamin B12 and One-Carbon Metabolism, 2014.
- “Folate-iron interactions in the heavy-chain ferritin knockout mouse,” Molecular and Human Nutrition Seminar Series, 2007.
- “Regulation of the 5-Formyltetrahydrofolate Futile Cycle and *DE NOVO* Purine Biosynthesis by 5,10-Methenyltetrahydrofolate Synthetase,” Dissertation Seminar, Cornell University, December 2006.
- “Methenyltetrahydrofolate synthase-mediated regulation of purine biosynthesis,” Molecular and Human Nutrition Seminar Series, 2006.

Publications (*corresponding author)

- Hwang, S., Baker, C., and **Field, M.S.*** (2024) Disruption of mitochondrial folate metabolism leads to mitochondrial DNA leakage and activation of apoptotic or inflammatory pathways. *BioRxiv*, doi: <https://doi.org/10.1101/2024.07.30.605854>
- Heyden, K.E., Malysheva, O.M., MacFarlane, A.J., Brody, L.C., and **Field, M.S.*** (2024) Excess folic acid exposure increases uracil misincorporation into DNA in a tissue-specific manner in a mouse model of reduced methionine synthase expression. *J. Nutr.*, under revision
- Blank, H.M., Hammer, S.E., Boatright, L., Roberts, C., Heyden, K.E., Nagarajan, A., Tsuchiya, M., Brun, M., Johnson, C.D., Stover, P.J., Sitcheran, R., Kennedy, B.K., Adams, L.G., Kaeberlein, M., **Field, M.S.**, Threadgill, D.W., Andrews-Polymenis, H.L., and Polymenis, M. (2024) Late-life dietary folate restriction reduces biosynthetic processes without compromising healthspan in mice. *Life Science Alliance*, **7**: e202402868.
- Bailey, R.L., MacFarlane, A.J., **Field, M.S.**, Tagkopoulos, I., Baranzini, S.E., Edwards, K.M., Rose, C.J., Schork, N.J., Singhal, A., Wallace, B.C., Fisher, K., Markakis, K., and Stover, P.J. (2024) Artificial intelligence in food and nutrition evidence: challenges and opportunities, *PNAS Nexus*, under review
- Francis, D.K., Awuah, E.B., Karakochuk, C.D. Williams, B., Castillo, L.F., **Field, M.S.**, Dixit, R., and Cassano, P.A. (2024) Vitamin B supplementation for sickle cell disease. *Cochrane Database Scientific Reviews*, under review
- Tiani, K., Arenaz, C., Spill, M.K., Foster, M.J., Davis, J., Bailey, R.L., **Field, M.S.**, Stover, P.J., and MacFarlane, A.J. (2024) The use of ginger bioactive compounds in pregnancy: an evidence scan and umbrella review of existing meta-analyses. *Adv. Nutr.*, under revision

- Walsh, D.J., Bernard, D.J., Fiddler, J.L., Pangilinan, F., Esposito, M., Harold, D., **Field, M.S.**, Parle-McDermott, A., and Brody, L.C. (2024) Vitamin B12 status and folic acid supplementation influence mitochondrial heteroplasmy levels in mice as they age. *PNAS Nexus*, pgae116.
- Ortiz, S.R. and **Field, M.S.*** (2023) C2C12 muscle myotubes, but not kidney proximal tubule HK-2 cells, elevate erythritol synthesis in response to oxidative stress. *Curr, Dev. Nutr.*, **7**: 102012.
- Stover, P.J., **Field, M.S.**, Andermann, M.L., Bailey, R.L. Batterham, R.L., Cauffman, E., Frühbeck, G., Iversen, P.O., Starke-Reed, P., Sternson, S.M., Vinoy, S., Witte, A.V., Zuker, C.S., Angelin, B. (2023) Neurobiology of eating behavior, nutrition and health. *J. Intern. Med.*, **294**: 582-604.
- Lechner, L., Opitz, R., Silver M., Krabusch P., Prentice, A.M., **Field, M.S.**, Stachelscheid, H., Leitão, E., Schröder, C., Vallone, V.F., Horsthemke, B., Jöckel, K., Schmidt, B., Nöthen, M.M., Hoffmann, P., Herms, S., Kleyn, P.W., Megges, M., Blume-Peytavi, U., Weiss K., Mai, K., Blankenstein. O., Obermayer, B., Wiegand, S., Kühnen, P. (2023) Early-set POMC methylation variability is accompanied by increased risk for obesity and is addressable by MC4R agonist treatment. *Sci. Transl. Med.*, **15**: eadg1659.
- Ortiz, S.R. and **Field, M.S.*** (2023) Sucrose intake elevates erythritol in plasma and urine in male mice. *J. Nutr.*, 153: 1889-1902.
- Heyden, K.E., Fiddler, J.L., Xiu, Y., Malysheva, O.M, Handzlik, M.K., Phinney, W.N., Stiles, L., Stabler, S.P., Metallo, C.M., Caudill, M.A., and **Field, M.S.*** (2023) Reduced methionine synthase expression results in uracil accumulation in mitochondrial DNA and impaired oxidative capacity. *PNAS Nexus*, 2: pga105
- Fiddler, J.L, Blum, J.E., Heyden, K.E., Castillo, L.F., Thalacker-Mercer, A.E., and **Field, M.S.*** (2023) Impairments in *SHMT2* expression or cellular folate availability reduce oxidative phosphorylation and pyruvate kinase activity. *Genes Nutr.* 18: 5.
- Francis, D.K., Awuah, E.B., **Field, M.S.**, Karakochuk. C.D., Dixit, R., Cassano, P.A. (2022) Protocol-Intervention: Vitamin B supplementation for sickle cell disease. *Cochrane Database of Scientific Reviews*, October 2022.
- Field, M.S.***, Bailey, R.L, and Stover, P.J. (2022) Unrecognized riboflavin deficiency and cascading effects on B6 status. *Amer. J. Clin. Nutr.*, nqac269.
- Stover, P.J., **Field, M.S.**, Brawley, H.N., Angelin, B., Iverson, P.O., and Fruhbeck, G. (2022) Nutrition and Stem Cell Integrity in Aging. *J. Intern. Med.*, **292**: 587-603.
- Ortiz, S.R., Heinz, A., Hiller, K., and **Field, M.S.*** (2022) Erythritol synthesis in human cells is elevated in response to oxidative stress and regulated by the non-oxidative pentose phosphate pathway. *Front. Nutr.*, **9**: 953056.
- Field, M.S.*** Bailey, R.L., Brannon. P.M., Gregory, J.F., Lichtenstein, A.F., Saldanha, I.J., Schneeman, B.O. (2022) Scanning the Evidence: Process and lessons learned from an evidence scan of riboflavin to inform decisions on updating the riboflavin dietary reference intakes. *Amer. J. Clin. Nutr.*, **116**: 299-302.
- Blum, J.E., Gheller, B.J, Benvie, A., **Field, M.S.**, Panizza, E., Vacanti, N.M., Berry, D. & Thalacker-Mercer, A.E . (2021) Pyruvate Kinase M2 supports muscle progenitor cell proliferation but is dispensable for skeletal muscle regeneration after injury. *J. Nutr.*, **151**: 3313-3328.
- Fiddler, J.L., Xiu, Y., Blum, J.E., Lamarre, S.G., Phinney, W.N., Stabler, S.P., Brosnan, M.E., Brosnan, J.T., Thalacker-Mercer, A.E., and **Field, M.S.*** (2021) Reduced *Shmt2*

- expression impairs mitochondrial folate accumulation and respiration and leads to uracil accumulation in mouse mitochondrial DNA. *J. Nutr.*, **151**: 2882-2893.
- Ortiz, S.R. and **Field, M.S.*** (2021) Chronic dietary erythritol exposure elevates plasma erythritol level in mice but does not cause weight-gain or modify glucose homeostasis. *J. Nutr.*, **151**: 2114-2124.
- Field, M.S.**, Mithra, P., and Pena-Rosas, J.P. (2021) Wheat flour fortification with iron and other micronutrients for reducing anaemia and improving iron status in populations. *Cochrane Database of Scientific Reviews*, January 2021.
- Gheller, B.J., Blum, J.E, Lim, E.W., Handzlik, M.K., Fong, E.H.H., Ko, A.C., Khanna, S., Gheller, M.E., Bender, E.L., Alexander, M.S., Stover, P.J., **Field, M.S.**, Cosgrove, B.D., Metallo, C.M., Thalacker-Mercer, A.E. (2020) Extracellular serine and glycine are required for mouse and human skeletal muscle stem and progenitor cell function. *Mol. Metab.*, **43**: 101106.
- Maruvada, P., Stover, P.J., Mason, J.B., Bailey, R.L., Davis, C.D., **Field, M.S.**, Finnell, R.H., Garza, C., Green R., Gueant. J-L., Jacques, P.F., Johnston, B., Klurfeld, D.M., Lamers, Y., MacFarlane, A., Miller, J.F., Molloy, A.M., O'Connor, D.L., Pfeiffer, C.M., Potischman, N.A., Rodricks, J.V., Rosenberg, I.H., Ross, S.A., Selhub, J., Shane, B., Stabler, S.P., Trasler, J., Yamini, S., and Zappalà, G. (2020) Knowledge gaps in understanding the metabolic and clinical effects of excess folates/folic acid: a summary, and perspectives, from an NIH workshop. *Amer. J. Clin. Nutr.*, **112**: 1390-1403
- Stover, P.J., Garza, C., Durga, J., and **Field, M.S.** (2020) Emerging Concepts in Nutrient Needs. *J. Nutr.*, **150**, Supp 1, 2593S-2601S.
- Xiu, Y. and **Field, M.S.*** (2020) The Roles of Mitochondrial Folate Metabolism in Supporting Mitochondrial DNA Synthesis, Oxidative Phosphorylation, and Cellular Function. *Curr. Dev. Nutr.*, **4**: nzaa153.
- Field, M.S.**, Mithra, P., Estevez, D., and Pena-Rosas, J.P. (2020) Wheat flour fortification with iron for reducing anaemia and improving iron status in populations. *Cochrane Database of Scientific Reviews*, July 2020.
- Ortiz, S.R. and **Field, M.S.*** (2020) Mammalian Metabolism of Erythritol, a Predictive Biomarker of Metabolic Dysfunction. *Curr. Opin. Clin. Nutr. Metab. Care*, **23**: 296-301.
- Lachenauer, E.R., Stabler, S.P., **Field, M.S.**, and Stover, P.J. (2020) p53 Disruption Increases Uracil Accumulation in DNA of Murine Embryonic Fibroblasts and Leads to Folic Acid-Nonresponsive Neural Tube Defects in Mice. *J. Nutr.*, **150**: 1705-1712.
- Schlicker, L., Szebenyi, D.M.E., Ortiz, S.R., Heinz, A., Hiller, K., and **Field, M.S.*** (2019) Unexpected roles for ADH1 and SORD in catalyzing the final step of erythritol biosynthesis. *J. Biol. Chem.*, **294**, 16095-16108.
- Chon, J., **Field, M.S.**, and Stover, P.J. (2019) Deoxyuracil in DNA and disease: genomic signal or managed situation? *DNA Repair*, **77**: 36-44.
- Tiani, K.A., Stover, P.J., and **Field, M.S.*** (2019) Nutrition and the blood-brain barrier. *Ann. Rev. Nutr.*, **39**: 147-173.
- Misselbeck, K., Marchetti, L., Priami, C., Stover, P.J., and **Field, M.S.*** (2019) The 5-formyltetrahydrofolate futile cycle reduces pathway stochasticity in an extended hybrid-stochastic model of folate-mediated one-carbon metabolism *Sci Rep.*, **9**: 4322.

- Garza, C., Stover, P.J., Ohlhorst, S.D., **Field, M.S.**, Steinbrook, R., Rowe, S., Woteki, C., and Campbell, E., (2019) Best practices in nutrition science to earn and keep the public's trust. *Amer. J. Clin. Nutr.*, **0**: 1-19.
- Alonzo, J.R., Venkataraman, C., **Field, M.S.**, and Stover, P.J. (2018) The mitochondrial inner membrane protein MPV17 prevents uracil accumulation in mitochondrial DNA. *J. Biol. Chem.*, **293**: 20285-20294.
- Lan, X., **Field, M.S.**, and Stover, P.J. (2018) Cell Cycle Regulation of Folate-Mediated One-Carbon Metabolism. *Wiley Interdisciplinary Reviews: Systems Biology and Medicine*, **10**:e1426.
- Field, M.S.**, Kamynina, E., Chon, J., and Stover, P.J. (2018) Nuclear Folate Metabolism. *Ann. Rev. Nutr.*, **38**: 219-43.
- Field, M.S.***, Lan, X., Stover, D.M., and Stover, P.J. (2018) Uridine modifies tumorigenesis in the *Apc^{Min/+}* model of intestinal cancer. *Curr. Dev. Nutr.*, **2**: nzy013
- Field, M.S.** and Stover, P.J. (2017) Safety of folic acid. *Ann. NY Acad. Sci.*, **1414**: 59-71.
- Stover, P.J., Durga, J., and **Field, M.S.** (2017) Folate and blood-brain barrier dysfunction. *Curr. Opin. Biotechnol.*, **44**: 146-152.
- Palmer, A.M., Kamynina, E., **Field, M.S.**, and Stover, P.J. (2017) Folate rescues vitamin B12 depletion-induced inhibition of nuclear thymidylate biosynthesis and genome instability. *Proc. Natl. Acad. Sci.*, **114**: E4095-4102
- Kamynina, E., Lachenauer, E., DiRisio, A.C., Liebenthal, R.P., **Field, M.S.**, and Stover, P.J. (2017) Arsenic trioxide targets MTHFD1 and SUMO-dependent nuclear *de novo* thymidylate biosynthesis. *Proc. Natl. Acad. Sci.*, **114**: E2319-E2326.
- Misselbeck, K., Marchetti, L., **Field, M.S.**, Scotti, M., Priami, C., and Stover, P.J. (2017) A hybrid stochastic model of folate-mediated one-carbon metabolism: Effect of the common C677T *MTHFR* variant on *de novo* thymidylate biosynthesis. *Sci Rep.*, **11**: 797.
- Bae, S., Chon, J., **Field, M.S.**, and Stover, P.J. (2017) Alcohol dehydrogenase 5 is a source of formate for *de novo* purine biosynthesis in HepG2 cells. *J. Nutr.*, **147**: 499-505.
- Chon, J., Stover, P.J., and **Field, M.S.** (2017) Targeting Nuclear Thymidylate Biosynthesis. *Molecular Aspects of Medicine*, **53**: 48-56.
- Stover, P.J., Berry, R.J., and **Field, M.S.** (2016) Time to think about nutrient needs in chronic disease. *JAMA Internal Medicine*, **176**: 1451-1452
- Field, M.S.**, Stover, P.J., and Kisliuk, R. (2016) Thymidylate Synthesis. In: eLS. John Wiley & Sons, Ltd: Chichester. DOI: 10.1002/9780470015902.a0001397.pub3
- Field, M.S.**, Kamynina E., Watkins, D., Rosenblatt, D.S., Stover, P.J. (2016) MTHFD1 regulates nuclear *de novo* thymidylate biosynthesis and genome stability. *Biochimie*, **126**: 27-30.
- Field, M.S.**, Kamynina E., Watkins, D., Rosenblatt, D.S., Stover, P.J. (2015) New insights into the metabolic and nutritional determinants of severe combined immunodeficiency. *Rare Diseases*, **3**: 1, e1112479.
- MacFarlane, A.J., Behan, N.A., **Field, M.S.**, Williams, A., Stover, P.J., and Yauk, C.L. (2015) Dietary folic acid protects against genotoxicity in the red blood cells of mice. *Mutat. Res.*, **779**: 105-111.
- Stover, P.J., MacFarlane, A.J., and **Field, M.S.** (2015) Bringing clarity to the role of MTHFR variants in neural tube defect prevention. *Am. J. Clin. Nutr.*, **101**: 111-2.

- Martiniova, L, **Field, M.S.**, Finkelstein, J.L., Perry, C.A. and Stover, P.J. (2015) Maternal dietary uridine causes, and deoxyuridine prevents, neural tube closure defects in a mouse model of folate-responsive neural tube defects. *Am. J. Clin. Nutr.*, **101**: 860-9.
- Field, M.S.**, Kamynina E., Watkins, D., Rosenblatt, D.S., Stover, P.J. (2015) Human Mutations in Methylenetetrahydrofolate Dehydrogenase 1 Impair Nuclear *de novo* Thymidylate Biosynthesis. *Proc. Natl. Acad. Sci.*, **112**: 400-405.
- Field, M.S.**, Kamynina E., Agunloye, O.C., Liebenthal, R.P., Lamarre, S.G., Brosnan, M.E., Brosnan, J.T., and Stover, P.J. (2014) Nuclear enrichment of folate cofactors and methylenetetrahydrofolate dehydrogenase 1 (MTHFD1) protect *de novo* thymidylate biosynthesis during folate deficiency. *J. Biol. Chem.* **289**: 29642-50.
- Stover, P.J. and **Field, M.S.** (2014) Pyridoxal, pyridamine, and pyridoxine (B6) *Adv. Nutr.*, **6**: 132-3.
- Field, M.S.**, Shields, K.S., Abarinov, E.V., Malysheva, O.V., Allen, R.H., Stabler, S.P., Ash, J.A., Strupp, B.J., Stover, P.J., and Caudill, M.A. (2013) Reduced MTHFD1 activity in male mice perturbs folate- and choline-dependent one-carbon metabolism as well as transsulfuration. *J. Nutr.* **143**: 1-5.
- Abarinov, E.V., Beaudin, A.E., **Field, M.S.**, Perry, C.A., Allen, R.H., Stabler, S.P. and Stover, P.J. (2013) Disruption of *Shmt1* impairs hippocampal neurogenesis and mnemonic function in mice (2013) *J. Nutr.* **143**: 1028-35.
- Stover, P.J. and **Field, M.S.** (2011) Trafficking of Intracellular Folates. *Adv. Nutr.* **2**: 325-31.
- Field, M.S.**, Anderson, D.D., and Stover, P.J. (2011) *Mthfs* is an essential gene in mice and a component of the purinosome. *Front. Gene.* **2**: 1-13.
- Field, M.S.**, Anguera, M.C., Page R., and Stover, P.J. (2009) 5,10-Methenyltetrahydrofolate synthase activity is increased in tumors and modified the efficacy of antipurine LY309887. *Arch. Biochem. Biophys.* **481**: 145-50.
- Field, M.S.**, Young, M.F., and O'Brien, K.O. "Maternal iron status and transfer of iron to the fetus" In *Physiology of Mother-Fetus Relationship*. (2010) Ed. Lafond, J., and Vaillancourt, C. Kerala: Research Signpost.
- Field, M.S.**, Szebenyi, D.M.E., and Stover, P.J. (2006) Regulation of *de novo* purine biosynthesis by methenyltetrahydrofolate synthetase in neuroblastoma. *J. Biol. Chem.* **281**: 4215-22.
- Field, M.S.**, Szebenyi, D.M.E., Perry, C.A., and Stover P.J. (2007) Inhibition of 5,10-methenyltetrahydrofolate synthetase. *Arch. Biochem. Biophys.* **458**: 194-201.
- Field, M.S.** and Stover, P.J. (2007) Regulation of the 5-formyltetrahydrofolate futile cycle and purine biosynthesis by methenyltetrahydrofolate synthetase, p 300-316 in *The Proceedings of the 13th International Symposium on Chemistry and Biology of Pteridines and Folates*.
- Anguera, M.C., **Field, M.S.**, Perry, C., Ghandour, H., Chiang, E.P., Selhub J., Shane, B., and Stover, P.J. (2006) Regulation of folate-mediated one-carbon metabolism by 10-formyltetrahydrofolate dehydrogenase. *J. Biol. Chem.* **281**: 18335-18342.

Research Support

NIH/NHLBI R01 (2024-2028)

\$188,000

Title: Metabolic Impact and Mechanism of Enhanced Mitochondrial Calcium Uptake in Mitochondrial Cardiomyopathies

Role: Co-Investigator (PI: Dipayan Chaudhuri, University of Utah)

Bill and Melinda Gates Foundation (2023-2025) \$110,000

Title: Systems Approaches to Improve Maternal and Child Health Outcomes Through Nutrition

Role: Co-Investigator (MPI: Amanda MacFarlane, Regan Bailey, Patrick Stover, Texas A&M University)

DOD/Combat Capabilities Command (2022-2025) \$450,000

Title: The role of folate in maintenance of mitochondrial DNA integrity and mitochondrial function

Role: Principal Investigator

UAB Nathan Shock Center Pilot Award (2021-2022) \$25,000

Title: Impact of B12 deficiency on skeletal muscle mitochondrial DNA and function in advanced age

Role: Co-Principal Investigator (Co-PI: Anna Thalacker-Mercer, University of Alabama at Birmingham)

NIH/NHLBI R21 (2022-2024) \$26,000

Title: Prenatal folate status regulates hematopoietic stem cell establishment

Role: Co-Investigator (PI: Anna Beaudin, University of Utah)

USDA/NIFA Federal Capacity Funds (2021-2024) \$90,000

Title: Elevated plasma erythritol: a biomarker linking dietary intake to onset of chronic metabolic disease

Role: Principal Investigator

2019 President's Council of Cornell Women Affinito-Stewart Grant \$10,000

Title: Novel methods to detect uracil misincorporation in mitochondrial DNA at near base-pair resolution

Role: Principal Investigator

Mentored Students and Scholars

Post-doctoral Research Associates

Joanna Fiddler, Cornell University, 2019-2022

Jonquile Williams, Cornell University, 2024-present

Graduate Students

Semira Ortiz, PhD candidate, Cornell University, 2018-2023

Yuwen Xiu, MS, Cornell University, 2018-2020
Kendra Tiani, PhD candidate, Cornell University, 2018-2023
Katarina Heyden, PhD candidate, Cornell University, 2019-2024
Luisa Castillo, PhD candidate, Cornell University, 2021-present
Allison Chang, MS, Cornell University, 2021-2022
Sinwoo Hwang, PhD candidate, Cornell University, 2021-2023
Caitlyn Pelletier, PhD student, Cornell University, 2024-present

Undergraduate Students (* supervised for Cornell honors thesis)

*Rodrigo Gutierrez, Cornell University, 2017-2019
Hannah Stein, Cornell University, 2017-2019
Rachel Kim, Cornell University, 2018-2020
Allison MacDonald, Cornell University, summer 2019
Erica Rosario, CUNY Hunter College, summer 2019
Blake Antal, University of Binghamton, summer 2019
*Amer Ahmed, Cornell University, 2019-2022
Sanjna Das, Cornell University, 2019-2020
Vincent Lam, Cornell University, 2019-2020
Angelina Wang, Cornell University, 2019-2021
*Karissa DiPierro, Cornell University, 2019-2022
*Sabrina Liew, Cornell University, 2020-2022
*Peyton Carpen, Cornell University, 2019-2023
*Eric Gan, Cornell University, 2021-2023
*Brian Walker, Cornell University, 2021-2023
Ruby Berger, Cornell University, 2022-2024
Cameron “Czara” Baker, California State University Fullerton, summer 2023
Regan Preciado, Cornell University, 2023-present
Julian Amunadaray, Cornell University, 2024-present
Patrick Hollister, Cornell University, 2024-present
Judith Uyane, Cornell University, 2024-present
Reid Schwartz, Cornell University, 2024-present

Visiting Scholars

Lisa Schlicker, PhD, University of Braunschweig, Spring 2017 and February 2019
Georgia Watt, undergraduate researcher, University College Dublin, Ireland, 2022-2023

Editorial/Review

Edited Volumes

- “Food biotechnology 2021,” *Current Opinion in Biotechnology*
- “Precision Nutrition,” *Nutrition and Metabolism*

Editorial Boards

- Annual Review of Nutrition, Editorial Committee member, 2024-2028

- Annual Review of Nutrition guest editor, 2023
- PNAS Nexus Board of Reviewing Editors, 2021-present
- Scientific Reports, 2019-2021
- Nutrition and Metabolism, 2018-2022
- Journal of Trace Elements in Medicine and Biology, 2013-present

Journals (ad hoc reviewer)

Journal of Nutrition, Nutrition Reviews, PLoS ONE, Journal of Trace Elements in Medicine and Biology, Environmental and Molecular Mutagenesis, American Journal of Clinical Nutrition, Trends in Cancer, Nutrients, Scientific Reports, Nucleic Acids Research, Proceedings of the National Academy of Sciences, Molecular Metabolism, Cochrane Systematic Reviews

Volunteer Organizations

Cornell MS Society, Faculty Advisor, 2017-2020

Children's Liturgy of the Word Instructor, St. Mary's of the Lake, 2017-2020

Schuyler County Little League, Tee Ball Coach, Spring 2015

Other Professional Experience

Graduate Research Assistant

2000- 2007

Cornell University, Ithaca, NY

- Investigated the effects of 5,10-methenyltetrahydrofolate synthetase (MTHFS) expression on folate-mediated one-carbon metabolism
- Performed comprehensive study of the determinants of MTHFS substrate and inhibitor binding affinity
- Identified MTHFS as a 10-formyltetrahydrofolate, the folate cofactor required for purine synthesis, tight-binding protein
- Determined that MTHFS expression enhances *de novo* purine biosynthesis *in vivo*

Intern, Lilly Research Laboratories

1999-2000

Eli Lilly, Indianapolis, IN

- Studied the transport properties of cell membrane β -lactam antibiotic and dipeptide transporters PepT1 and hpt-1 using cell culture models.
- Characterized the tissue-specific expression patterns of these transporters.

Teaching Experience

Cornell University, Ithaca, NY

2001-present

- Co-Instructor, Precision Nutrition and Health (NS4210/NS6210, 3 Credits), 2024-present
- Instructor, Methods in Nutritional Sciences Laboratory (NS3320, 3 Credits), 2015-present.
- Teaching assistant for Introduction to Human Biochemistry (NS320), 2005.
Supervisor: Prof. Patrick Stover.

- Teaching assistant for Principles of Biochemistry: Proteins and Metabolism (BioBM331), 2001. Supervisor: Prof. Gerald Feigenson.
- Teaching assistant for Principles of Biochemistry: Molecular Biology (BioBM332), 2002. Supervisor: Prof. Bik Tye.

New York Chiropractic College, Seneca Falls, NY

2007

- Taught introductory macronutrient metabolism course as part of the Master's in Clinical Nutrition program.
- Designed curriculum which covered biochemistry of amino acid, carbohydrate and lipid metabolism and regulation thereof.

Patents

PCT International Application No. PCT/US12/34963, filed 25 April 2012, for USE OF URIDINE AND DEOXYURIDINE IN THE TREATMENT OF FOLATE-RESPONSIVE PATHOLOGIES, claiming priority of U.S. Provisional Application Serial Nos. 61/478,669, filed 25 April 2011, and 61/515,356, filed 5 August 2011 (Applicant: Cornell University) (Cornell Ref. 5476-03-PC) (Inventor: Patrick J. Stover and Martha S. Field)

PCT International Application No. PCT/US2017/040898, filed 06 July 2017, for STABLE PRO-VITAMIN DERIVATIVE COMPOUNDS, PHARMACEUTICAL AND DIETARY COMPOSITIONS, AND METHODS OF THEIR USE, claiming priority to U.S. Provisional Application Serial No. 62/359,040, filed 06 July 2016 (Applicant: Cornell University) (Cornell Reference No.: 7416-02-PC) (Inventors: Patrick J. Stover and Martha S. Field)