

HUGH McTAVISH, Ph.D., J.D.
Pharmaceutical Executive and Patent Attorney

Employment:

Founder and Executive Director, 2020-present
COVID-Sanity.org. Nonprofit with mission to provide factual information on the benefits and harms of COVID lockdowns.

Founder and President, 2004-present
IGF Oncology, LLC. Biotech company developing a new family of proprietary targeted anti-cancer chemotherapy agents.

Founder and President, 2012-present
Squarex, LLC. Pharmaceutical company developing a new drug for treating and preventing cold sores (herpes labialis).

Patent Attorney and Owner, 2003-present
McTavish Patent Firm, Pine Springs, Minnesota

Patent Attorney, 2001-2003
Primary Duties: Patent drafting and patent prosecution, primarily biotech, chemical, and pharmaceutical cases.
Schwegman, Lundberg, Woessner & Kluth, P.A., Minneapolis

Research Associate, 1994-2000
Department of Biochemistry
University of Minnesota

Instructor, teaching *Introduction to Microbiology*, 1996
Department of Microbiology
University of Minnesota

Postdoctoral Research Associate, 1993-1994
Department of Botany and Plant Pathology
Oregon State University

Education:

J.D., Cum Laude, University of Minnesota Law School, 2001

Ph.D., Biochemistry, University of Minnesota, 1992

Thesis Title: Enzymology and Molecular Biology of Ammonia Oxidation in *Nitrosomonas europaea*

M.S., Molecular Biology and Biochemistry, Brown University, 1986

B.A., Biology, Carleton College, 1984

Selected Scientific Publications:

McTavish H, Zerebiec KW, Zeller JC, Shekels LL, Matson MA, Kren BT. Immune characteristics correlating with HSV-1 immune control and effect of squaric acid dibutyl ester on immune characteristics of subjects with frequent herpes labialis episodes. *Immun Inflamm Dis*. 2019 Mar;7(1):22-40. doi: 10.1002/iid3.241. Epub 2019 Feb 12.

Palli MA, McTavish H, Kimball A, Horn TD. Immunotherapy of Recurrent Herpes Labialis With Squaric Acid. *JAMA Dermatol*. 2017 Aug 1;153(8):828-829. doi: 10.1001/jamadermatol.2017.0725

Chang ALS, Honari G, Guan L, Zhao L, Palli MA, Horn TD, Dudek AZ, McTavish H. A phase 2, multicenter, placebo-controlled study of single-dose squaric acid dibutyl ester to reduce frequency of outbreaks in patients with recurrent herpes labialis. *J Am Acad Dermatol*. 2020 Dec;83(6):1807-1809. doi: 10.1016/j.jaad.2020.04.021. Epub 2020 Apr 11.

Alkhateeb HB, Patnaik MM, Al-Kali A, Zblewski DL, Wallerich S, McTavish H, Dudek AZ. Phase 1b Study of IGF-Methotrexate Conjugate in the Treatment of High-grade Myelodysplastic Syndromes. *Anticancer Res*. 2020 Jul;40(7):3883-3888. doi: 10.21873/anticancer.14378.

McTavish H, Griffin RJ, Terai K, Dudek AZ. Novel insulin-like growth factor-methotrexate covalent conjugate inhibits tumor growth in vivo at lower dosage than methotrexate alone. *Transl Res*. 2009 Jun;153(6):275-82.

McTavish H. Hydrogen evolution by direct electron transfer from photosystem I to hydrogenases. *J Biochem*. 1998 Apr;123(4):644-9.

Seffernick JL, McTavish H, Osborne JP, de Souza ML, Sadowsky MJ, Wackett LP. Atrazine chlorohydrolase from *Pseudomonas* sp. strain ADP is a metalloenzyme. *Biochemistry*. 2002 Dec 3;41(48):14430-7.

Strong LC, McTavish H, Sadowsky MJ, Wackett LP. Field-scale remediation of atrazine-contaminated soil using recombinant *Escherichia coli* expressing atrazine chlorohydrolase. *Environ Microbiol*. 2000 Feb;2(1):91-8.

McTavish H, Sayavedra-Soto LA, Arp DJ. Comparison of isotope exchange, H₂ evolution, and H₂ oxidation activities of *Azotobacter vinelandii* hydrogenase. *Biochim Biophys Acta*. 1996 May 23;1294(2):183-90.

McTavish H, Arciero DM, Hooper AB. Interaction with membranes of cytochrome c554 from *Nitrosomonas europaea*. *Arch Biochem Biophys*. 1995 Dec 1;324(1):53-8

McTavish H, Sayavedra-Soto LA, Arp DJ. Substitution of *Azotobacter vinelandii* hydrogenase small-subunit cysteines by serines can create insensitivity to inhibition by O₂ and preferentially damages H₂ oxidation over H₂ evolution. *J Bacteriol*. 1995 Jul;177(14):3960-4.

McTavish H, Fuchs JA, Hooper AB. Sequence of the gene coding for ammonia monooxygenase in *Nitrosomonas europaea*. *J Bacteriol*. 1993 Apr;175(8):2436-44.

McTavish H, LaQuier F, Arciero D, Logan M, Mundfrom G, Fuchs JA, Hooper AB. Multiple copies of genes coding for electron transport proteins in the bacterium *Nitrosomonas europaea*. *J Bacteriol*. 1993 Apr;175(8):2445-7.

Hooper AB, Logan M, Arciero DM, McTavish H. c-cytochromes of the ammonia-oxidizing chemolithoautotrophic bacteria. *Biochim Biophys Acta*. 1991 May 23;1058(1):13-6.

McTavish H, Picorel R, Seibert M. Stabilization of Isolated Photosystem II Reaction Center Complex in the Dark and in the Light Using Polyethylene Glycol and an Oxygen-Scrubbing System. *Plant Physiol*. 1989 Feb;89(2):452-6.

McTavish H. A demonstration of photosynthetic state transitions in nature. *Photosynthesis Research*, 1988, 17:247-254.

Selected Patents as Inventor:

U.S. Patent No. 10,744,084. McTavish, H et al. Non-specific delayed-type hypersensitivity response to treat herpes simplex virus infection.

U.S. Patent No. 9,675,671. McTavish, H. et al. Fusion proteins containing insulin-like growth factor-1 and epidermal growth factor and variants thereof and uses thereof.

U.S. Patent No. 9,205,065. McTavish, H. et al. Non-specific delayed-type hypersensitivity response to treat herpes simplex virus infection.

U.S. Patent No. 8,017,102. McTavish, H. et al. Toxins and radionuclides coupled to IGF-1 receptor ligands for treatment of cancer.

U.S. Patent No. 6,410,258. McTavish, H., Molecular hydrogen production by direct electron transfer.

U.S. Patent No. 7,811,982. McTavish, H., Compounds and methods for treating cancer.

U.S. Patent No. 7,677,993. McTavish, H. Tennis backboard.

U.S. Patent No. 7,687,250. Offerman, J., McTavish, H. et al. Ethanol production from biological wastes.