Skylar J. Ferrara, Ph.D.

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Summary

- Senior Scientist leading company's product and pipeline development in the bioconjugation space
- Drug design (10+ years of experience) and preclinical development of three licensed technologies
- Co-inventor of drug (ABX-002) in Phase II clinical trial (NCT05528315) for major depressive disorder
- Main co-inventor of licensed intellectual property that forms the basis of Autobahn Therapeutics, Inc.
- 17+ years of experience working on multidisciplinary projects at the interface of chemistry and biology

Skills

- **Bioconjugation/Medicinal Chemistry/Chemical Biology**: Experience consulting and leading multiple drug discovery projects. Expertise in synthetic organic chemistry and basic biological techniques: RT-qPCR, ELISA, immunofluorescence staining and microscopy, ICC, IHC, and cell culture techniques. Extensive experience with in vitro and in vivo pharmacology, small animal handling, tissue dissection and processing, and bioanalytical methods development (LC-MS/MS). Expertise in protein modification and characterization: biorthogonal chemistry, click chemistry, antibody-drug conjugates, gel electrophoresis and blotting, SEC, TFF, IEX chromatography.
- **Pharmacology**: Proficient in pharmacodynamics and pharmacokinetics experiments and analysis, DMPK, disease models (EAE, neuroinflammation), neuroscience and immunology methods. Experience with WinNonlin software.
- **Computational Drug Design/Biology:** Knowledge of and experience with structure- and ligand-based drug design and QSAR. Experience using Schrödinger Small Molecule Drug Discovery Suite (Maestro, LiveDesign, Glide, LigPrep, QikProp, Canvas and KNIME workflows). Extensive use of visualization software (Chimera, PyMOL) in addition to use of 3D structure-based modeling environments for ligand-protein interactions (ligand conformations, ionization, tautomers/protomers, chirality) and drug properties (SwissADME). Experience using Python (RDKit) for drug discovery applications.

Experience

20BLOC Biopharma

***Senior Scientist – Research and Development Lead*, May 2023-present**

- Lead scientist creating company's therapeutics pipeline for oncology and cardiovascular indications
- Directed small team of scientists from discovery to pilot studies for company's lead HBOC product in < 1 year
- Generated novel intellectual property (2 patent applications) related to protein modifiers, crosslinking agents, and new drug entities/compositions of matter
- Acting stand-in for Director of R&D and internal study sponsor for all company's animal testing
- Managed a variety of CROs/CDMOs to push projects forward and meet expected project deadlines

Oregon Health & Science University (OHSU)

***Postdoctoral Fellow with Prof. Thomas S. Scanlan*, Oct. 2014-April 2023**

- Focused on drug design and preclinical development of nuclear receptor modulators as potential therapeutics for neurological disorders
- Orchestrated a small team on the synthesis, characterization, and pharmacology of potent, selective thyroid hormone analog drugs from screening through lead development and into disease models
- Developed a prodrug strategy which increases CNS penetration of drugs while attenuating their peripheral exposure (awarded cover of *ACS Med. Chem. Lett.* Vol. 10, Issue 1, **2019**)
- Established a small set of highly potent thyroid hormone receptor antagonists designed from physical organic chemistry principles
- Discovered an immunoregulatory role for thyroid hormone rendering previously undruggable neuro and metabolic drug target TREM2 druggable by thyromimetics

Education

Tulane University, New Orleans, LA
Ph.D., Chemistry (2007-2014)

Graduate Advisor: Prof. James P. Donahue

Bard College, Annandale-on-Hudson, NY
A.B., Chemistry — ACS certified (2003-2007)
Advisor: Prof. Craig M. Anderson

Patents/Patent Applications

(7) Lepak, A.; Rozzell, D.; Ferrara, S.; Lu, K.; Dcona, M.; Pawar, N.; Goebel, E. "HEMOGLOBIN-BASED OXYGEN CARRIER COMPOSITIONS" Filed May 15, 2024. Application No. 63/647,813.
(6) Lepak, A.; Ferrara, S.; Lu, K.; Rozzell, D. "MULTIFUNCTIONAL LINKERS COMPOUNDS" Filed January 25, 2024. Application No. 63/625,049.
(5) Scanlan, Thomas S.; Ferrara, Skylar J. "Thyroid hormone receptor antagonists and their amide prodrugs" Filed April 16, 2019.
(4) Scanlan, Thomas S.; Ferrara, Skylar J. "Amide prodrugs of small molecule nuclear receptor modulators"
US Patent 11,613,517, 2023. – ***Licensed to Autobahn Therapeutics, Inc.***
(3) Scanlan, T. S.; Meinig, J. M.; Ferrara, S. J.; Banerji, T.; Banerji, T. "Amide compounds, pharmaceutical compositions thereof, and methods of using the same"
US Patent 11,325,886, 2022. – ***Licensed to Autobahn Therapeutics, Inc.***
(2) Scanlan, Thomas; Devereaux, J; Placzek, A; Banerji, T; Ferrara, S; Meinig, JM; Banerji, T "DERIVATIVES OF SOBETIROME"
US Patent 10,870,616, 2020. – ***Licensed to Autobahn Therapeutics, Inc.***
(1) Scanlan, T.; Placzek, A.; Banerji, T.; Ferrara, S.; Meinig, J. M. "Derivatives of sobetirome"
US Patent 9,701,650, 2017.

Selected Publications (*= co-first author, 18 publications in total - request for full list)

(6) **Ferrara SJ**, Chaudhary P, DeBell MJ, Marracci G, Miller H, Calkins E, Pocius E, Napier BA, Emery B, Bourdette D, Scanlan TS. "*TREM2* is thyroid hormone regulated making the TREM2 pathway druggable with ligands for thyroid hormone receptor." *Cell Chemical Biology* **2022** 29, 239-248.
(5) **Ferrara SJ**, Scanlan TS. "A CNS-Targeting Prodrug Strategy for Nuclear Receptor Modulators." *Journal of Medicinal Chemistry* **2020** 63, 9742-9751. PMID 32787092 DOI: 10.1021/acs.jmedchem.0c00868
(4) Hartley MD, Banerji T, Tagge I, Kirkemo LL, Chaudhary P, Calkins E, Galipeau D, Shokat MD, DeBell MJ, VanLeuven S, Miller H, Marracci G, Pocius E, Banerji T, **Ferrara SJ**, Meinig JM, Emery B, Bourdette D, Scanlan TS. "Myelin repair stimulated by CNS-selective thyroid hormone action." *Journal of Clinical Investigation – Insight* **2019** 4(8), e126329. PMID 30996143 DOI: 10.1172/jci.insight.126329
(3) ***Ferrara SJ**, *Meinig JM, Banerji T, Banerji T, Sanford-Crane HS, Bourdette D, Scanlan TS. "Structure-Activity Relationships of Central Nervous System Penetration by Fatty Acid Amide Hydrolase (FAAH)-Targeted Thyromimetic Prodrugs." *ACS Medicinal Chemistry Letters* **2019** 10, 111-116.
PMID 30655956 DOI: 10.1021/acsmedchemlett.8b00501
(2) **Ferrara SJ**, Bourdette D, Scanlan TS. "Hypothalamic-Pituitary-Thyroid Axis Perturbations in Male Mice by CNS-Penetrating Thyromimetics." *Endocrinology* **2018**, 159, 2733-2740. PMID: 29846550 DOI: 10.1210/en.2018-00065
(1) Devereaux J, **Ferrara SJ**, Banerji T, Placzek AT, Scanlan TS. "Increasing Thyromimetic Potency through Halogen Substitution." *ChemMedChem* **2016**, 11 (21), 2459-2465. PMID 27731931 DOI: 10.1002/cmdc.201600408

Honors and Awards

Member of the National Academy of Inventors (inducted 2021-present)
OHSU Technology Transfer and Business Development: New Licensed Technology Award (2018 and 2019)
National Institutes of Health-NRSA T32 Neuroendocrine Training Grant (2015-2016)

Professional Organizations

National Academy of Inventors (2021-present)
American Association for the Advancement of Science (2016-present)
American Chemical Society (member 2005-present)