CALIBRATE MEDCHEM CONSULTING INC.

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CURRICULUM VITAE
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I. PERSONAL

Name: Ravi P. Nargund, Ph.D.

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Independent medicinal chemistry and drug discovery consultant. Distinguished drug hunter with extensive medicinal chemistry, drug discovery and R&D expertise (Strategy, Pipeline Prioritization, Execution and Resourcing)

Ravi has over 32 years of medicinal chemistry drug discovery research and management experience, including organization design, and matrixed management, at Janssen R & D and Merck Research Laboratories (MRL) in Rahway and Kenilworth NJ and South San Francisco, CA. He served on Therapeutic Area (TA) and Discovery Sciences leadership teams and Governance Committees to support pipeline prioritization, scientific and strategic operations. In this role, Ravi reviewed and approved program transitions, including project ideation, portfolio entry, target validation & research operating plan build, hit-to-lead and lead optimization transitions, NME candidate approval and Phase 1b/2a POC. He managed large internal/external medicinal chemistry teams and served as lead or chair for scientific teams, multifunctional discovery core teams and early development teams. His group progressed >25 clinical candidates, including multiple compounds through Phase 1b/2a/2b/3 studies for various therapeutic indications. Ravi is highly experienced in collaborating with and deriving value from CROs in the US, EU and Asia for medicinal chemistry, including small molecules, peptides, bispecific and bioconjugates, DMPK, formulation development and efficacy studies. He is highly knowledgeable in discovery and development activities leading to IND and EMEA submissions, including translational PK/PD, modeling and simulation, target engagement and/or efficacy biomarker plan development for decision-making in preclinical animal models and clinical studies. He possesses strong cross modality collaboration expertise with siRNA, and biologics/bioprocess departments for carrying out medicinal chemistry, molecular biochemistry and applying conjugation approaches to modulate pharmacokinetics, dose interval and pharmacology of proteins. Ravi is experienced in programs requiring once daily oral dosing (QD, PO), orally dosed gut targeting, inhaled and parenteral delivery (SC and IV) and implants to cover up to 6-month dose interval (PrEP). He is familiar with ophthalmology targets and delivery approaches such as topical and intravitreal.

Ravi has therapeutic area strategy experience in kidney, liver, and retinal diseases, diabetes, obesity and pulmonary arterial hypertension (PAH). He had led projects and delivered candidates in the disease areas and immunology, oncology, immuno-oncology, endocrine, neuroscience, and virology disease areas. Ravi is experienced in chemical biology, reverse pharmacology approaches, such as phenotypic screening/tool ID/target ID.

With direct or hands on expertise for medicinal chemistry and predictive methods (AI/ML) for drug design and development for small molecules, peptides (cyclic, stapled, dimeric), targeted protein degraders (TPD, Protacs, heterobifunctional degraders), bioconjugates, insulins, chemistry capabilities (parallel medicinal chemistry; HTE), Ravi can impact programs positively.

Ravi served on BD&L committees at Merck and Janssen covering over 20 years. He has deep knowledge of the business of science and emerging AI/ML predictive tools and methods. Ravi can critically evaluate preclinical and clinical assets, target biology, screening strategies and hits at all discovery and development stage gates, including PPIs, allosteric kinase inhibitors, transcription factors, and other complex target interfaces. He had knowledge of technologies to increase oral absorption of large molecules, including cyclic peptides and proteins.

Ravi has authored or co-authored 114 publications in refereed journals; he is an inventor on over 120 issued U.S. patents and/or pending patent applications. He has been an invited speaker 30 times at major symposia or at universities. Working closely with his medicinal chemistry mentor at Merck, Arthur A. Patchett, they described the concept of "privileged structures" for the design of receptor agonists and antagonists of G protein-coupled receptors (GPCRs) and enzyme inhibitors. This approach has been utilized widely in industry and in academia for designing new leads. Their peptidyl privileged structure design was successfully employed in identifying the first series of small molecule agonists for peptide ligand receptors, including ghrelin, somatostatin, melanocortin and motilin. These works were published in *Nature, Cell, PNAS, Science, ACS Med.Chem. Lett.* and as communications to the Editor of *J. Med. Chem*. Furthermore, Ravi has written two Perspective articles *in J. Med. Chem* and chapters in *Annual Reports in Medicinal Chemistry* describing highlights of their research.

As a Board member representing Janssen R & D and J & J on the R & D Council of New Jersey Council, Ravi worked to recognize inventions and innovation across the state, and support STEM education and the Edison patent awards.

Ravi was a member of the American Chemical Society (ACS) from 1990 till the present. From 1/03 to 9/05, served on the Long-Range Planning Committee (LRPC), Medicinal Chemistry Section of the American Chemical Society (ACS) and contributed to setting the programs at the fall and spring ACS meetings. In 2007, I was elected as Industrial Councilor from the ACS Medicinal Chemistry Division and served in this role from 8/07 to 8/09. During this period, he was a member of the Executive Committee of MEDI and organized the ISMC-ACS Joint Symposium in Shanghai, China and represented the ACS MEDI Executive Committee at this meeting. From 8/09 –8/10, he served on the Awards Committee, Medicinal Chemistry Division, ACS. Highly visible in the medicinal chemistry community by chairing sessions at ACS meetings and medicinal chemistry Gordon conferences. From 2017-2019, Ravi was on the advisory committee for the American Peptide Symposium.

II. EDUCATION

School	Date	Major/Minor/Courses	Degree
Allegheny College, Meadville, PA	1983	Chemistry	B.S. (Magna Cum Laude)
Indiana University, Bloomington, IN	1988	Organic Chemistry	Ph.D. (Prof. Paul A. Grieco)
Columbia University, NY, NY	1990	Organic Chemistry	Post Doc. (Prof. Gilbert Stork)

III. ACADEMIC ENGAGEMENTS

Rutgers University, The State University of New Jersey, Ernest Mario School of Pharmacy

Title/Department/Site	**From – To**
Adjunct Professor, Department of Medicinal Chemistry	**7/22 - present**

IV. CONSULATION EXPERIENCE

Calibrate MedChem Consulting (Principal) **4/22 – present**

Biotech/Pharma
Oncology Due Diligence Completed for Blueprint Medicines **12/22**

Scientific Advisory Board Member and Consultant, Nimble Therapeutics **7/22 – present**

Significant advisor for a selection of projects on building the internal pipelines with a focus on two therapeutic areas (i.e. peptide SAR, research operating plan (ROP) creation, including cellular and in vivo assays). Heavily involved in the recruitment of the CSO who is currently on board.

FAR Biotech, Houston, TX and Salt Lake City, UT **6/22 – present**

Advisor, strategy, and value creation. Identified 4 high value targets that are being prosecuted in silico for lead identification, including potency and properties. The in-silico leads will be synthesized and validated in binding and functional assays. Another focus is on a significant capital raise to support build out of the proprietary and highly differentiated computational methods for hit identification and elaboration.

METiS Therapeutics, Cambridge, MA **5/22 – present**

Consultant for medicinal chemistry, project prosecution, and program strategy for delivery of milestones, IP, portfolio strategy, projects, resourcing and governance for small molecules and RNA therapeutics. Significant accomplishments include in-licensing of a pan-RAF inhibitor and SOS1 candidate by METiS. There are ongoing partnering discussions for the LNPs and targeting.

V. EMPLOYMENT HISTORY

JANSSEN R & D, LLC., a Johnson & Johnson Company, (4 years)

Title/Department/Site	**From – To**
Senior Director, Discovery Chemistry, Spring House PA/Boston	**7/18 – 4/22**

Managed group of 26 chemists based in Springhouse PA and Boston, including 2 Senior Scientific Directors and 3 Directors, as direct reports. Team delivered 3 NMEs for Janssen's highest portfolio priority programs, including Factor XI inhibitor (QD, PO, conventional formulation) and an immunology clinical candidate current being evaluated in Phase 2A POC studies and a second candidate to attain first-in-human designation in September 2022. An additional 3 novel, first-in-class NMEs for the treatment of kidney injury, fibrotic diseases, psoriasis and psoriatic arthritis should be delivered in the coming 12 months supported by human dose prediction, translational PK/PD and biomarkers for dose ranging in Phase 1b/2a. Grew department from 20 to 65 chemists, by instituting organizational changes, talent upgrades, hiring campaigns and supported significant build of Chemical Capabilities to carry out parallel medicinal chemistry (PMC), high throughput experimentation (HTE) and DEL screening. Member of Global Discovery Chemistry Leadership Team (LT), Therapeutics Discovery Extended LT, Renal/Hepatic Disease Area Stronghold TA strategy committee. Represented Discovery Chemistry on Governance Committees (CVM Discovery and Pre-portfolio Councils and Immunology Early Portfolio Council) with oversight of portfolio entry thru Phase 2A POC for projects in kidney (IV and oral), liver (oral, liver-targeted), and retinal diseases (intravitreal and topically delivered), pulmonary arterial hypertension (PAH; inhaled)) and cytokine blocker immunology PPI targets (oral). Established a peptide group in Spring House and helped to frame the 3-year vision and strategy for this initiative in collaboration with the Screening and cell pharmacology groups and In Silico Discovery functions as well as the Chemical and Pharmaceutical Development & Supply (CPDS) organization.

Served as JRC member for Janssen-Morphic collaboration for integrin inhibitors targeting kidney diseases. JSC member for Janssen-AdoRx collaboration for lung cancer initiative. Served on Discovery Sciences Leadership Team focused on improving Janssen's NME quality, reducing attrition at program stage gates and defining cycle times for program stage gates. SME for Non-clinical safety (NCS) workstreams for developing a scorecard to support het-to-lead and lead optimization programs.

Licensing and collaborations

- Core team member for the in-licensing and tech transfer of PeptiDream's mRNA display platform. Served on multiple due diligence teams that led to Go or NoGo decisions for preclinical and clinical assets, platforms and hit finding plans.

MERCK/Merck Res. Labs (MRL) EMPLOYMENT HISTORY (28 years)

Title/Department/Site	**From – To**
Executive Director, Discovery Chemistry, Rahway & Kenilworth, NJ and South San Francisco, CA	**9/11 – 6/18**

Managed group of up to 45 internal chemists with 4 Directors and 2 Senior Principal Scientists direct reports in the Kenilworth organization. Major deliveries were portfolio alignment and organization build in South San Francisco. Oncology, Cardiometabolic and infectious diseases (antibacterial and antiviral) projects were the main focus for the team. Contributed to delivery of 7+ clinical candidates. Breakthrough insulin portfolio, including glucose responsive insulin (MK-2640, Phase 1b) and insulin receptor partial agonists (MK-5160 and MK-1092; Phase 1b/2a). Additional disclosed candidates include MK-1462 (GLP1/Glucagon-R co-agonist) and MK-5475 (inhaled sGC activator for PAH; https://clinicaltrials.gov/ct2/show/NCT04732221). Moreover, the following Phase 1b/2a candidates include MK-8666, partial agonist of the GPR40 receptor (FFAR1) and HCV Site D inhibitor MK-8876 have been described in the literature.

Licensing and collaborations

- I served on various cross divisional business development & licensing (BD&L) committees, including CVM, Diabetes and Endocrine, Cardiovascular and Urology, with goals of supplementing the respective company's pipeline with in-licensed candidates or targets and implementing research strategy. Significant deliverables include creation of a partnership with Pfizer for the co-development of the SGLT2 inhibitor ertugliflozin (Phase 3) and acquisition of SmartCells Inc. for glucose responsive insulins.

Strategic Initiatives

- SmartCells Acquisition and Site Closure (2010 - present): as co-lead with a partner from MRL Financial Planning and Analysis, successfully integrated scientific and project-based assets for the glucose responsive insulin project from the SmartCells site to Merck resulting in closure of the Massachusetts site in less than six months. Served as the first Merck Core Team Lead for this novel insulin (protein therapeutic) project or modality that resided at the interface of biologics and small molecules. Hence, I established program governance model, team structure and research operating strategy by leveraging the strengths of MRL Biologics and Small Molecule (Discovery & Preclinical Sciences) Organizations. Program progressed from TIDV-LOE-Clinic. Furthermore, successful partnerships established with Prof. Richard DiMarchi, Indiana University and Calibrium. Moreover, led and participated in discussions with KOLs, including a meeting with Obesity leaders in San Francisco in October 2017.

- Merck: Organizational design and re-organizations: participated in up to three rounds of changes, including many that resulted in head count reduction and/or reassignment of personnel.

Senior Director, Medicinal Chemistry, Rahway, NJ **11/04 – 10/11**

Led a group of up to 30 chemists with 4-5 senior medicinal chemist/leader reports. The research focus were in the areas of diabetes, pain, and cardiovascular diseases. Major pipeline accomplishments include discovery and advancement of reversible, long residence time, fatty acid amide hydrolase (FAAH) inhibitor (MK-4099 (Pain/CNS; inhibitor) and MK-3168 (Pain/CNS; PET tracer for determining target engagement/enzyme occupancy of brain fatty acid amide hydrolase) to Phase 1b. Additional phase 1b candidates include MK-1421, MK-4256 (Diabetes; somatostatin subtype-3 antagonist) and a breakthrough long acting NO donor MK-8150 (resistant hypertension and endothelial dysfunction; *J Am Heart Assoc*, **2016,** *5 (9*), 1-12). Three NO-conjugated angiotensin receptor blocker clinical candidates were tested in Phase 1b for relevant coverages of the AT1 receptor with additional efficacy via NO release.

Led research collaborations and served on Joint Steering Committees on behalf of Merck Research Labs with NicOx (CVD/hypertension; lead optimization), Kyorin (antibiotics; lead optimization), Advinus (CVD target validation and lead optimization entry) and Orchid (antibiotics; lead optimization). Served as core team lead to evaluate R&D partnership opportunities in India by employing an arbitrage model deal structure. Due diligence activities led a signed agreement between MRL and Advinus to prosecute two early-stage targets. Served as scientific leader for compiling the work plan, including IP and publication strategies, negotiating terms that were endorsed by Merck senior management. Importantly, the research collaboration successfully delivered on program milestones for both targets.

Strategic Initiatives

- Merck Basic Research Operating Strategy Implementation & Merck-Schering Plough Integration (2007-10):

- CIBE Spain Site Closure and Merck Supported Medina Spin Off: As lead for MRL Global Counter-screens project, reported directly to the Site Head. I created research strategy and implementation plans that led to successful transition of all off-target screens (hERG, CYP assays, ion channels, etc.) from the CIBE facility in Spain to Rahway, NJ. Significant pipeline and productivity impact to MRL by delivering on highly upgraded assays with high data reliability and aggressive cycle times in 6 months. I built a high performing team that was comprised of pharmacologists, assay specialists, MRL business integration, project management and MRL engineering and safety/industrial hygiene that managed space planning, headcount assignment and recruitment, assay miniaturization and pioneered use of Biotrove's Rapidfire high throughput screening system. The plan which was approved in 2007 recommended externalization following successful assay capability build in Rahway. Assays now operate at Evotec.

- Program and Global Site Transitions: Served as lead for MRL's Basic Research Operating Strategy Implementation focused on program transitions which delivered on all the objectives and successfully managed pipeline deliverables. Responsibilities included assembling a cross divisional team, building strategy and implementation timelines with pipeline risk assessment, for transitioning projects, scientists, and assets while remodeling Rahway facilities to accommodate new functions and workflows. Additional responsibilities were managing cost and developing site master plans with business development and facilities management teams to renovate buildings and/or refurbish labs.

- Merck-Schering Plough Integration and Rahway Site Integration. As Rahway Site Lead for implementing integration plans, successfully delivered on all company score card goals, by establishing strategy to fully manage transition of scientists, projects, labs, assets, including equipment and attaining approval for building and/or facilities to accommodate new work flows. Reported directly to the Rahway Site Head to build the Rahway site master plan and routinely made strategic presentations to the global integration leader to optimize future research productivity (adjacencies, lab design, collaboration and networking).

- Merck-Rahway Site Promotions Committee and Talent Management: Over 4 years of service that resulted in promotions for deserving chemists and biologists based on business need, competencies and accomplishments. Mentored two doctoral fellows in the United Negro College Fund/Merck Foundation Program.

Director, Medicinal Chemistry, RY **11/98 – 10/04**

Responsible for a group of 20+ medicinal chemists with 2 Sr. Principal Scientist/Principal scientist level reports. Personally led the high priority, centrally acting, melanocortin subtype-4 receptor (MC4R) agonist program and had responsibility delivering the centrally acting bombesin subtype-3 receptor agonist program for the treatment of obesity. The following first-in-class MC4R clinical candidates MK-0493, MK-0489, and MK-1661 were approved as preclinical candidates. Two candidates progressed to Phase 2a. MK-1661 was supported by validated biomarkers via vertical and horizontal integration for brain MC4R engagement). MK-5046 (Obesity/CNS: bombesin subtype-3 receptor agonist, orphan receptor) progressed to Phase 1b POC studies.

Senior Research Fellow, Medicinal Chemistry, RY **7/96 – 10/98**

Research Fellow, Medicinal Chemistry, RY **7/93 – 7/96**

Senior Research Chemist, Exploratory Chemistry, Rahway (RY), NJ 7/90 – 6/93

After joining Arthur Patchett's group in 1990, I worked on two phenotypic screen programs (LPXc and GH secretagogues). LPXc, a zinc dependent deacetylase for treating gram negative bacterial infections, was pursued used an phenotypic screening strategy and the first class of inhibitors were described in *Science*. I was promoted as an accelerated rate to Sr. Research Fellow for identifying MK-0677 and back-up candidates. My team used a novel phenotypic screening approach in pituitary cells to optimize weak leads, based on a privileged template hypothesis, that ultimately led to the discovery of a clinical candidate called MK-0677. MK-0677 was later shown to bind and activate the growth hormone secretagogue receptor (GHS-R), first cloned at Merck, and the GHS-R was later shown to be the receptor for a novel orexigenic hormone called ghrelin. This research has been considered to be a tour-de-force. Led a group of 6 chemists and carried out research on identifying potent and CNS penetrant agonists of the melanocortin subtype-4 receptor agonists and agonists of the somatostain subtype-2 receptor (SSTR2). These successes, including target validation via in vivo POC, during this tenure led to nomination of the aforementioned programs for high priority candidate deliveries by Merck Research Laboratories (MRL).

VI. NON-INDUSTRY EMPLOYMENT HISTORY

Teaching Assistant, Indiana University, Department of Chemistry, 1983-1984

VII. ACADEMIC EXPERIENCE

Completed total syntheses of the natural products (±)-biflora-4, 10(19), 15-triene and a highly oxygenated quassinoid, (±)-klaineanone for doctoral studies. Developed methodology which led to the eventual completion of the total synthesis of tetracycline at Columbia University.

VIII. TRAINING

Merck Biology/Medicinal Chemistry Course (1990)
Drew University Course in Drug Discovery (1991)
ACS Course of improving oral bioavailability and PK properties (1998)
Merck-Rider University Leadership Development Program (2004)
Janssen Executive Leadership Development Program (2019)
Various Janssen & Merck management, strategy, business of science, regulatory, and computer training courses. (1990-Present)

IX. SOCIETY MEMBERSHIPS (including offices held)

6/90 – present American Chemical Society

1/03 – 9/05 Member of the Long Range Planning Committee, Medicinal Chemistry Section, American Chemical Society

8/07 – 8/09 Industrial Councilor, Medicinal Chemistry Division, American Chemical Society

8/07 – 8/09 Executive Committee, Medicinal Chemistry Division, American Chemical Society

8/09 –8/10 Awards Committee, Medicinal Chemistry Division, American Chemical Society

X. ACADEMIC AND PROFESSIONAL HONORS/ACTIVITIES

1/89 - 5/90	Review Editor, *Chemical Highlights*, Columbia University.
8/96	Session Chair, 1996 Medicinal Chemistry Gordon Research Conference.
96/97	Member of Ph.D. Committee of Darshan Makhey, a graduate student in the laboratories of Prof. Ed. LaVoie, Dept. of Pharm. Sciences, Rutgers, NJ.
6/98	Co-Chair, Medicinal Chemistry Session, American Association of Pharmaceutical Sciences Eastern Meeting, Parsippany, NJ.
6/98 – 8/99	Mentor to graduate student, Dayle Smith, University of Arizona through the Merck/United Negro College Fund (UNCF) Program.
1997-1998	Mentor to minority undergraduates Timothy Smith and Ryan Jean-Bapiste, 1999 MRL Summer Intern Program
9/00 – 9/01	Mentor, MRL Mentoring Program
4/02	Session Chair, American Chemical Society 223rd National Meeting, Orlando, FL, April 2002.
9/05	Session Chair, American Chemical Society 230th National Meeting, Washington, DC, September, 2005.
8/08	Organizer and ACS Medicinal Chemistry Division Executive Committee Member for ISMC-ACS Joint Symposium in Shanghai, China, 7/25/08 to 8/01/08.
6/17 – 6/19	Member of Advisory Board for 2019 American Peptide Symposium
6/19	Session Chair, Peptide Drug Hunter Session, American Peptide Symposium, Monterrey, CA

XI. ACADEMIC AND PROFESSIONAL HONORS

Graduate and Professional Opportunities Program Fellowship, 8/83 - 8/86
Phi Beta Kappa, Phi Lambda Upsilon, 1983
American Institute of Chemists (Pittsburgh Chapter) Student Research Award, 1983
Lubrizol Foundation Fellowship, 1982
Alden Scholar, Allegheny College, 1981, 1982, 1983.

XII. PUBLICATIONS

1. Grieco, P. A.; **Nargund, R. P.,** "Synthetic Studies on Diterpenes from a Termite Soldier: Total Synthesis of (±)-Biflora-4, 10(19), 15-triene," *Tetrahedron Lett.* **1986**, *26*, 4813.

2. Spohn, R. F.; Grieco, P. A.; **Nargund, R. P.**, "Chemical Transformations in the Quassinoid Series Construction of the Sensitive Hydroxy Enone Functionality Present in Ring A of Quassimarin and Related Quassinoids," *Tetrahedron Lett.* **1987**, *28*, 2491.

3. Grieco, P. A.; Parker, D. T.; **Nargund, R. P.**, "The Total Synthesis of a Highly Oxygenated Quassinoid, (±)-Klaineanone," J. *Am. Chem. Soc.* **1988**, *110*, 5568.

4. Grieco, P. A.; **Nargund, R. P.**; Parker, D. T., "The Total Synthesis of a Highly Oxygenated Quassinoid, (±)-Klaineanone," J. *Am. Chem. Soc.* **1989**, *111*, 6287.

5. Patchett. A. A.; **Nargund, R. P.**; Tata. J. R.; M. -H. Chen, Barakat, K. J.; Johnston, D. B. R.; Cheng. K.; Chan, W. W-S.; Butler, B.; Hickey, G.; Jacks, T.; Schleim, K.; Pong, S.-S.; Chaung, L. Y.-P.; Chen, H.Y.; Frazier, E.; Leung, K. H.; Chiu, S. -H. L.; Smith, R. G. "Design and biological activities of L-163,191 (MK-0677): A potent, orally active growth hormone secretagogue" *Proc. Natl. Acad. Sci. (USA*) **1995**, *92*, 7001.

6. Pong, S.-S.; Chaung, L.-Y. P.; Dean, D.; **Nargund, R. P.**; Patchett, A. A.; Smith, R. G. "Identification of a new receptor for growth hormone secretagoues (MK-0677)" *Mol. Endocrinol.* **1996**, *10*, 57.

7. Dean, D.; **Nargund, R. P. (Senior Author)**, Pong, S. -S.; Shaw, R.; Griffin, P.; Melillo, D. G.; Van Der Ploeg, Patchett, A. A.; Smith, R. G. "Development of a High Specific Activity Sulfur-35 Labelled Sulfonamide Radioligand: Discovery of the Growth Hormone Secretagogue (MK-0677) Receptor" *J. Med. Chem.* **1996**, *39*, 1767.

8. **Nargund, R. P.**; Barakat, K. J.; Cheng, K.; Chan, W. W.-S.; Butler, B. B.; Smith, R. G.; Patchett, A. A. "Synthesis and Biological Activities of Camphor-Based Non-Peptide Growth Hormone Secretagogues" *Bioorg. Med. Chem. Lett.* **1996**, *6*, 1265.

9. Stork, G.; La Clair, J. J.; Spargo, P.; **Nargund, R. P.**; Tatoh, N. "Stereocontrolled Synthesis of (±)-12a-Deoxytetracycline" *J. Am. Chem. Soc.* **1996,** *118*, 5304.

10. Jones, A. N.; Dean, D. C.; Jenkins, H. J.; Melillo, D. G.; **Nargund, R. P.**; Wallace, M. A. "Synthesis, Stability, and Radiolytic Decomposition of Carbon-14 Labelled MK-0677" *Journal of Labelled Compounds and Radiopharmaceuticals* **1996**, *28*, 561.

11. **Nargund, R.P.**, Chen, M.-H., Johnston, D.B.R., Barakat, K.H., Tata, J.R., Cheng, K., Jacks, T.M., Chan, W.W.-S., Wei, L., Butler, B.R., Hickey, G., Smith, R.G. And Patchett, A.A. "Peptidomimetic Growth Hormone Secretagogues: Synthesis And Biological Activities Of Analogs Varied At The Indole Nucleus Of The Prototypical Spiropiperidine L-162,752" Bioorg. *Med. Chem. Lett.* **1996**, *6*, 1751.

12. Howard, A.D., Feighner, S.D., Cully, D.F., Arena, J.P., Liberator, P.A., Rosenblum, C.I., Hamelin, M.J., Hreniuk, D.L., Palyha, O.C., Anderson, J., Paress, P.S., Diaz, C., Chou, M., Liu, K., Mckee, K.K., Pong, S-S., Chaung, L-Y., Elbrecht, A., Heavens, R., Rigby, M., Sirinathsinghji, D.J.S., Dean, D.C., Melillo, D.G., Patchett, A.A., **Nargund, R.**, Griffin, P.R., DeMartino, J. A.; Gupta, S. K.; Schaeffer, J.M., Smith, R.G. And Van Der Ploeg, L.H.T. "A New G-Protein Coupled Receptor Of The Pituitary And Hypothalamus Involved In Pulsatile GH Release" *Science* **1996**, *273*, 974.

13. Jacks, T.; Smith, R.; Judith, F.; Schleim, K.; Frazier, E.; Chen, H.; Krupa, D.; Hora, D.; **Nargund, R.**; Patchett, A.; Hickey, G. "MK-0677, A Potent, Novel, Orally-Active Growth Hormone Secreatagogue-Efficacy and Specificity in Beagles" *Endocrinology* **1996**, *137*, 5284.

14. Chang, C.H., Rickes, E.L., McGuire, L., Frazier, E., Chen, H., Barakat, K., **Nargund, R**., Patchett, A., Smith, R.G. and Hickey, G.J. Growth hormone (GH) and insulin-like growth factor I responses after treatments with an orally active GH secretagogue L-163,255 in swine. *Endocrinology* **1996**, *137*, 4851.

15. Smith, R. G.; Pong, S. -S.; Hickey, G.; Jacks, T.; Cheng, K.; Leonard, R.; Cohen, C. J.; Arena, J. P.; Chang, C. H.; Drisko, J.; Wyvratt, M.; Fisher, M.; **Nargund, R.;** Patchett, A. Modulation of pulsatile GH release through a novel receptor in hypothalamus and pituitary gland. In *Recent Progress In Hormone Research*, Conn, P.M., Ed.; Volume 51, The Endocrine Society: Bethesda, 1996; pp. 261-286.

16. Hreniuk, D. L.; Howard, A. D.; Rosenblum, C. I.; Palyha, O. C.; Diaz, C.; Cully, D. F.; Paress, P. S.; McKee, K. K.; Dashkevicz, M.; Arena, J. P.; Liu, K. K.; Schaeffer, J. M.; **Nargund, R. P**.; Smith, R. G.; Van der Ploeg, L. H. T.; Feighner, S. D. Cytochemical identification and cloning of a G-protein coupled growth hormone secretagogue receptor. *Soc. Neurosci.* **1996**, *22*, 1300 (Abstract).

17. Hickey, G.; Jacks, T.; Schleim, K.; Frazier, E.; Chen, H.; Krupa, D.; Feeney, W.; **Nargund, R.**; Patchett, A.; Smith, R. "Repeat Administration of the Growth Hormone Secretagogue MK-0677 Increases and Maintains Elevated IGF-1 Levels in Beagles" *J. Endocrinol.* **1997**, *152*, 183.

18. Smith, R. G.; Van der Ploeg, L. H. T.; Howard, A. D.; Feighner, S. D.; Cheng, K.; Hickey, G. J.; Wyvratt, M. J. Jr.; Fisher, M. H.; **Nargund, R. P**.; Patchett, A. A. Peptidomimetic regulation of growth hormone secretion. *Endocr. Rev.* **1997**, *18*, 621.

19. **Nargund, R.P.** and Van der Ploeg, L.H.T. Chapter 22. Growth hormone secretagogues. In Annual Reports in Medicinal Chemistry, Bristol, J., Ed.; Volume 32, Academic Press, New York, NY, 1997; pp 221 - 231.

20. Tata, J.R., **Nargund, R.P.,** Murphy, M.M., Johnston, D.B., Patchett, A.A., Cheng, K., Wei, L., Chan, W.W-S., Butler, B., Jacks, T.M., Hickey, G. And Smith, R. *Bioorg. Med. Chem. Lett.* **1997**, *7*, 663.

21. Feighner, S.D., Howard, A.D., Prendergast, K., Palyha, O.C., Hreniuk, D.L., **Nargund, R**., Underwood, D., Tata, J.R., Dean, D.C., Tan, C., Mckee, K.K., Woods, J.W., Patchett, A.A., Smith, R.G. And Van Der Ploeg, L.H.T. Structural requirements for the activation of the human growth hormone secretagogue receptor by peptide and non-peptide secretagogues. *Mol. Endocrinol.* **1998**, *12*, 137.

22. Lieber, R.L., Jacks, T.M., Mohler, R.H., Schleim, K., Haven, M., Cuizon, D., Hora, D., **Nargund, R.,** Feeney, W. And Hickey, G.J. Growth hormone secretagogue increases muscle strength during the remobilization phase of canine hind limb immobilization. *J. Orthopedic Res.* **1997**, *15*, 519.

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XIII. PATENTS

Over **100** issued patents and 25 pending patent (PCT) filings covering Factor XI inhibitors, breakthrough insulins, incretins, insulin-incretin bi- and tri-specifics, IDO inhibitors and heme displacers, FFAR1 (GPR40) receptor partial agonists and allosteric ago-PAMS, growth hormone secretagogues (Ghrelin Agonists), LPXC inhibitors, melanocortin-4 receptor subtype (MC4R) agonists, bombesin subtype-3 (BRS3) receptor agonists, NO-conjugated angiotensin receptor antagonists, diazenium diolate NO donors, reversible and CNS penetrant fatty acid amide hydrolase (FAAH) inhibitors, PET tracers for imaging FAAH, modulators of muscarinic receptors, HCV site D inhibitors, DGAT1 inhibitors, and somatostatin subtype-3 receptor (SSTR3) antagonists.

XIV. INVITED PRESENTATIONS (Universities & Conferences)

1. **Nargund, R. P.** "The design of orally active peptidomimetic growth hormones secretagogues" at the Industrial Associates 8th Annual Symposium, Columbia University, New York, NY, 10/20/95.

2. **Nargund, R.P.** "The design, synthesis and biological activities of spiropiperidine growth hormone releasing compounds" at the Indian Institute of Chemical Technology, Hyderabad, India, 11/23/1995.

3. **Nargund, R. P.,** "Development of potent, orally active small molecule agonists of the hexapeptide growth hormone secretagogue GHRP-6" at the IBC Conference on Structure and Function of G-Protein Coupled Receptors, Philadelphia, PA.; December, 11-13, 1995.

4. **Nargund, R.P.** "Peptidomimetic Growth Hormone Secretagogues" at the International Business Conference On G-Protein Coupled Receptors, Philadelphia, Pennsylvania, 10/02/1996 - 10/04/1996.

5. **Nargund, R.P.** "Orally Active Growth Hormone Secretagogues" at McGill University, Montreal, 11/8/96.

6. **Nargund, R. P.** "Development of MK-0677" to Journalism Students from New York University, Columbia University and Rutgers University as part of the Merck Public Affairs Seminar Program, 1996.

7. **Nargund, R. P.** "Designing Growth Hormone Secretagogues" at Rutgers University, Piscataway, NJ, 4/97.

8. **Nargund, R. P.** "Synthesis and Biological Activities of Peptidomimetic Growth Hormone Secretagogue MK-0677" at Ohio University, Athens, OH, 6/97.

9. **Nargund, R. P.** "Development of MK-0677" to Journalism Students from New York University, Columbia University and Rutgers University as part of the Merck Public Affairs Seminar Program, 1997.

10. **Nargund, R. P.** "Designing ligands for G-protein coupled receptors: Growth hormone secretagogues - a case study" at the British Pharmacological Society Winter Meeting, Harrogate, United Kingdom, 12/10/1997 - 12/12/1997.

11. **Nargund, R. P.** and Patchett, A. A. "Small molecule agonists for peptide receptors" at the 1999 MRL Orphan GPCR Meeting, La Sapinere, Canada, 3/17/1999 – 3/19/2000.

12. **Nargund, R. P.** and Patchett, A. A. "Some recent successes in the design of ligands for peptide ligands and receptors" at the Fifth IUPAC International Symposium on Bio-Organic Chemistry, Pune, India, 1/30/2000 – 2/4/2000.

13. **Nargund, R. P.** et al. L-166,446, a second generation growth hormone secretagogue. American Chemical Society, 222nd Annual Meeting, Chicago IL, Aug 25-Aug 30, 2001.

14. **Nargund, R. P.** et al. Design and biological profile of selective agonists for the melanocortin sub-type-4 receptor (MC4R). American Chemical Society, 222nd Annual Meeting, Chicago IL, Aug 25-Aug 30, 2001 (Smissman Award Program).

15. **Nargund, R. P.** Design and biological profile of piperazine-based MC4R agonists and antagonists. Gordon Research Conference on Medicinal Chemistry, New London, NH, Aug 1-Aug 6, 2004.

16. **Nargund, R. P.** Design and synthesis of potent and highly efficacious agonists for the human MC4 receptor. GPCRs in Medicinal Chemistry Symposium, Royal Chemical Society and Society for Chemistry of Italy, September 17-20, 2006, Verona, Italy

17. **Nargund, R. P.** Design and synthesis of agonists for the human MC4 receptor. Foundation for Biomedical Research, Academy of Athens, September 21, 2006, Athens, Greece.

18. **Nargund, R. P.** Design and biological profile of agonists for the MC4 receptor. Presentation at: Medicinal and Pharmaceutical Chemistry 3rd International Meeting (immpc), Antalya, Turkey, 10/16/07 - 10/21/07.

19. **Nargund, R. P**. Privileged structure-based design of agonists for the MC4 receptor. Presentation at: National Taiwan University, Taipei, Taiwan, 7/24/2008.

20. **Nargund, R**. P. Design and efficacy profile of highly potent MC4R agonists with high brain receptor occupancy. Presentation at 6th International Melanocortin Meeting, Utrecht, Netherlands, 8-11 July, 2010.

21. **Nargund, R.P**. Highs and Lows from a Decade of Research on the Discovery and Synthesis of MC4R agonists. Presentation at AMRI Drug Discovery Symposium. October 13-14, 2010.

22. **Nargund, R. P**. Lessons Learned from 10 Years of Research on Melanocortin Subtype-4 receptors Agonists. Presentation at New England College of Pharmacy, Portland, ME, September 27, 2013.

23. **Nargund, R.P.** Synthesis and biological profile of agonists for the Melanocortin Subtype-4 receptor. Lecture at Brandeis University, Waltham, MA, Nov 10, 2014.

24. **Nargund, R. P**. and Barrish, J. "The Medicinal Chemist of Tomorrow" ACS Webinar in the Drug Discovery Special Topics Section. April 28, 2016. https://www.acs.org/content/acs/en/acs-webinars/drug-discovery/drug-career.html

25. **Nargund, R.P.** Design, Synthesis and Biological Profile of MK-8666, a GPR40 (FFA1) Receptor Agonist. Lecture at 6th RSC / SCI symposium on GPCRs in Medicinal Chemistry, 13-15 June 2016, Verona, Italy

26. **Nargund, R. P.** et al. Engineering Glucose Responsiveness in to Insulin – Profile of MK-2640. At the 25th American Peptide Symposium, 17-22 June, 2017, Whistler, BC, Canada

27. **Nargund, R. P.** Design, Synthesis and Biological Profile of MK-2640, a Glucose Responsive Insulin. At New England Peptide Symposium, May 17, 2018.

28. **Nargund, R. P.** Design concepts and insights for designing breakthrough insulins. At Rutgers University, Ernest Mario School of Pharmacy, Piscataway, NJ. April 28, 2022.