

# FRANK P. LEU, PH.D.

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## PROFESSIONAL SUMMARY

Biotechnology strategist, molecular biologist, and pharmacologist with over 20 years of experience guiding pre-award research operations, proposal development, and interdisciplinary funding strategies across the biotech, academic, and government sectors. Expert in faculty research success through proposal support, budget compliance, and sponsor negotiation. Highly collaborative, adaptable, and outcomes-driven with a proven track record working with institutions, startups, and federal funding bodies.

## COMPETENCIES

- Molecular Biology, Enzymology & Pharmacology
- Drug Discovery & Development
- Extracellular Membrane Receptor Mechanism of Action and Therapeutics
- Preclinical Development: *in vitro*, tissue culture/cellular, animal models, and DMPK.
- High-level AI / Machine Learning in Biotech
- Innovative Technologies in Pharma R&D
- Strategic Technology Partnerships
- Intellectual Property & Technology Transfer
- Faculty Training & Research Development
- Cross-Departmental Coordination (Finance, Legal, Tech Transfer)
- Academic-Industry Collaboration
- Sponsored Research Administration
- Federal & Foundation Grant Compliance
- Proposal Budgeting & Streamline Systems
- Public-Private Research Partnerships

## EDUCATION

### MAY 1994 - SEPTEMBER 2001

#### PHARMACOLOGY, PH.D.

JOIN-PROGRAM: WEILL CORNELL GRADUATE SCHOOL OF MEDICAL SCIENCES AND MEMORIAL SLOAN-KETTERING CANCER CENTER GRADUATE SCHOOL, MANHATTAN, NY

### AUGUST 1990 - MAY 1994

#### BIOLOGY B.S. & BIOPHYSICS B.A. UNDERGRADUATE STUDIES

GRADUATED WITH HONORS WITH THE COMPLETION OF A RESEARCH PROJECT THESIS

BINGHAMTON UNIVERSITY, SUNY

BINGHAMTON, NY

## PROFESSIONAL CERTIFICATIONS

2018 **BLOCKCHAIN FOR BUSINESS – AN INTRODUCTION TO HYPERLEDGER TECHNOLOGIES**  
Linux Foundation

2018 **BLOCKCHAIN – UNDERSTANDING ITS USES AND APPLICATIONS**

Linux Foundation  
 2018 **BITCOIN AND CRYPTOCURRENCIES**  
 University of Berkeley  
 2018 **BLOCKCHAIN TECHNOLOGY**  
 University of Berkeley

## EXPERIENCE

2011-present Managing member and Founder of BioPharMatrix LLC, Metuchen, NJ.  
*Provide expertise in the area of innovation in life sciences, encompassing laboratory operations, pre-clinical and clinical operations, and data intelligence. Developing content for blockchain applications and intelligence in the life sciences and drug developments - from fundraising, discovery, pre-clinical, and clinical trials.*

2016 -present Advisor to the Pennovation Center for Innovation Bio-Labs at the University of Pennsylvania, Philadelphia, PA. On demand.  
*Provide expertise in the area of starting, building, planning, and running the bio-lab facilities in a technology incubator.*

2017 -present Adjunct Professor at Jefferson College of Biomedical Sciences, Philadelphia, PA  
 Teaching subject: *“Biotechnology Venture Management”, a graduate-level course.*

2022 -present Insight expert for Gerson Lehrman G (GLG) Network. On demand.

2022 -present Insight expert for Guidepoint Global International. On demand.

2019 -present Managing member of Novapeutics LLC, Metuchen, NJ

2011 -2019 Co-Founder and CEO of Novapeutics LLC, Philadelphia, PA  
*A joint venture with the University of Pennsylvania spun out to develop a small molecule curative for diabetes. Written SBIR grants and won funding from NIDDK; Negotiate and execute technology transfer agreements with the University and Companies; Negotiate and execute stakeholder agreements within the technology innovation systems, such as CROs, accounting, consulting, and law firms; Technology patent preparation; Put together and pitched business plans with executive summaries and slide decks to investors and pharmaceutical companies for investments and joint-venture opportunities; Established and built a research laboratory on the Pennovation Works campus; negotiate and forge strategic alliances with CROs from pre-clinical to clinical paths forward.*

2019 -2020 Advisor / Associate at Rutgers / Mito Biopharma LLC, Piscataway, NJ  
*Technology and grant consulting in the area of 1) A novel CRISPR Technology in gene editing for diseases, such as Duchenne Muscular Dystrophy and Alzheimer's; 2) Novel approach in targeting mitochondrial uncoupling for treating cancer, diabetes, and nonalcoholic Steatohepatitis; 3) Novel therapeutic for SARS CoV-2 / Covid-19.*

2002 -2010 Principal Research Scientist, Verto Institute LLC, New Brunswick, NJ  
*Led an antibody therapeutic program in creating humanized antibodies from discovery to better treat or cure neuroendocrine cancers/tumors; Review and recommend grant projects to be funded by our institute, and also for other investment opportunities; Patent writing and preparation; Prepare, write and publish peer-reviewed scientific articles; Write and prepare IRBs for animal vivarium use and obtain human samples; Explore and review in and out-licensing opportunities.*

2002-2010 Adjunct Instructor, University of Medicine and Dentistry of New Jersey, New Brunswick, NJ

2001-2002 Post-Doctoral Fellow, The Rockefeller University/ Howard Hughes Medical Institute, New York, NY  
*Studying DNA Replicase machinery - enzymatic mechanisms in replicating DNA.*

1996-2001 Lab Research Graduate Fellow, The Rockefeller University/ Howard Hughes Medical

	Institute, New York, NY <i>Elucidating mechanisms for parts and functions of DNA replication components using biochemistry, molecular biology, and enzymology methods.</i>
1994-2001	Pharmacology Ph.D., Weill Cornell Graduate School of Medical Sciences, New York, NY
1992-1994	Research Assistant in Dioxin Research, SUNY Upstate Medical University, Binghamton, NY <i>Epidemiology study on dioxins which are the toxic contaminant of Agent Orange. Assisted Dr. Arnold Schecter and team's findings on health or epidemiology research from Vietnam on cancer and birth defects concluded that dioxins are toxic and can cause cancer, immune deficiency, and nervous system damage including lower IQ and emotional problems, endocrine disruption including diabetes, thyroid problems, sex hormone disorders, liver damage, reproductive and developmental pathologies, and death from heart attacks in highly exposed populations.</i>
1990-1994	Independent Laboratory Research, Binghamton University, Binghamton, NY <i>Research topic: circadian rhythm change for the tobacco hornworm (Manduca sexta) in response to a commonly found tobacco phytochemical rutin. Which increased larval lifespan by 20% longer. This resulted in a publication with acknowledgment and completed an honor thesis, written and defended to graduate with Honors.</i>

## LEADERSHIP

2024	Chairperson for “15 <sup>TH</sup> Drug Discovery – Strategic Summit 2024”. Agile Falcon Strategic Group. Boston, MA. May 8 <sup>th</sup> - 9 <sup>th</sup> , 2024.
2020	Chairperson for “Clinical Trial Supply Southern California”, San Diego, CA. June 23 <sup>rd</sup> -24 <sup>th</sup> , 2020.
2019	Chairperson for the August 8 <sup>th</sup> morning plenaries. “T3: Trials, Tech and Transformation 2019” by Knect365. Philadelphia, PA. August 8 <sup>th</sup> -9 <sup>th</sup> , 2019.
2019	Conference opening speaker. “T3: Trials, Tech and Transformation 2019” by Knect365. Philadelphia, PA. August 8 <sup>th</sup> -9 <sup>th</sup> , 2019.
2019	Conference Organizing Advisor for “T3: Trials, Tech and Transformation 2019” by Knect365. Philadelphia, PA. August 8 <sup>th</sup> -9 <sup>th</sup> , 2019.
2019	Organizing Committee. Stem cell, Tissue Engineering and Regenerative Medicine. Amsterdam, Netherlands. March 25 <sup>th</sup> -26 <sup>th</sup> , 2019.
2019	Conference Chairperson. RO Quality Management and Oversight. CBI, a Division of UBM Americas. Boston, MA. March 7 <sup>th</sup> -8 <sup>th</sup> 2019.
2018	Panel Chairperson on “Strategic Partnership & Outsourcing” B2B Biology Strategy Meeting USA East Coast, Boston, MA. November 14 <sup>th</sup> , 2018.
2018	Conference Organization Advisor for “T3: Trials, Tech and Transformation 2018” by Knect365. Raleigh, NC. May 30 – 31 <sup>st</sup> , 2018
2018	Conference Organization Advisor for “2 <sup>nd</sup> Clinical Trials Nexus” by Procurement Direct. Boston, MA. May 14 <sup>th</sup> -15 <sup>th</sup> , 2018.
2018	A keynote speaker at the 2 <sup>nd</sup> Clinical Trials Nexus 2018, by Procurement Direct, Boston, May 14 <sup>th</sup> -15 <sup>th</sup> , 2018.
2017	Head of the organizing committee for the Panel “Seed Money and Beyond: Improving the flow of investment funds to our regions” 4 <sup>th</sup> Annual Life Science Collaborative Conference on “Why Invest in Philadelphia Now: Converting Risk Capital to Success Stories”. Philadelphia, PA. March 7 <sup>th</sup> , 2017.

## ACCOLADES

2018	Novapeutics nominated for Enterprise Awards, presented by PACT (Philadelphia Alliance for Capital and Technologies) for Healthcare Startup, 2018.
2016	Runner-up at the “Beyond the A Round” at the annual conference of Pharmaceutical Consulting Consortium International (PCCI)
2016	Chairman for the Preclinical Development Operations Summit 2016 hosted by Arena

	International on November 15 <sup>th</sup> and 16 <sup>th</sup> , Boston, MA.
2016	Novapeutics nominated for Enterprise Awards, presented by PACT (Philadelphia Alliance for Capital and Technologies) for Emerging Life Sciences, 2016.
2015-2016	Selected by the University of Pennsylvania Consulting Group to mentor project teams
2014	Selected by the Case Competitions for the University of Pennsylvania Graduate Consulting Club (PGCC) and to provide mentorship.
2013	Small Business Innovative Research (SBIR) Award from the National Institute of Health / National Institute of Diabetes and Digestive and Kidney Diseases (NIH/NIDDK) for Novel Diabetes Cure
2013	TechConnect National Innovation Award
2008	North-American Neuroendocrine Tumor Society Best Research Award
1994 -1996	NIH Graduate Fellowship
1993	Harpur College Scientific Reagent Award
1993	Howard Hughes Medical Institute Summer Research Fellow
1991	Harpur College Scholarship Award
1990	NIH Summer Research Fellow

## EVENT SPEAKER, MODERATOR, FACILITATOR, & CHAIR

2025	“The Role of AI and Leveraging Blockchain in Emerging BioPharma Trials”. East Coast, USA. 2024. Clinical Operations & Clinical Trial Supply Chain, Strategy Meeting East Coast, USA. Proventa International. Princeton, NJ. May 14 <sup>th</sup> , 2024. Facilitator.
2024	“Decentralized Trial Under Rapidly Evolving Standards Requires Disruptive Tech Adoption” Clinical Operations & Clinical Trial Supply Chain. Strategy Meetings East Coast USA, 2024. November 14 <sup>th</sup> , 2024. Facilitator.
2024	“Innovative Processes to Propel Clinical Studies Into the Future” 17 <sup>th</sup> Annual Clinical Trial Supply West Coast, September 17 <sup>th</sup> and 18 <sup>th</sup> , San Francisco, CA 2024. Speaker.
2024	“Disruptive Techs: Blockchain / Artificial Intelligence / Machine Learning and Drug Design and Synthesis“ Medicinal Chemistry Strategy Meeting East Coast US 2024. Proventa International. Princeton, NJ. May 15 <sup>th</sup> , 2024. Facilitator.
2024	“Current Adoption and Best Use of Disruptive Techs (Blockchain, AI, and ML) in Drug Discovery and Development” <u>Track: In silico biology with disruptive techs – blockchain, AI and ML</u> Drug Discovery, Biology and Bioinformatics Strategy Meeting, East Coast, USA 2024. Proventa International. Princeton, NJ. May 14 <sup>th</sup> , 2024. Facilitator.
2024	“Strategic Partnerships, Investment & Collaborations in Drug Development” <u>Track: Strategy Partnerships, Investment &amp; Collaborations</u> , Drug Discovery, Biology, and Bioinformatics Strategy Meeting East Coast USA 2024. Proventa International. Princeton, NJ. May 14 <sup>th</sup> , 2024. Facilitator.
2024	“Blockchain is Mandatory for High Fidelity Utilization of Downstream Disruptive Technologies, Such as Artificial Intelligence“ 15 <sup>TH</sup> Drug Discovery - Strategic Summit 2024. Agile Falcon Strategic Group. Boston, MA. May 8 <sup>th</sup> - 9 <sup>th</sup> , 2024. Speaker.
2023	“Blockchain comes before Artificial Intelligence-Exploring the Implications for the Future” Outsourcing in Clinical Trials, Arena & Global Data. King of Prussia, May 24 <sup>th</sup> , 2023. Speaker.
2023	“Assessing the Value of Partnership with Vendors in Terms of Cost, Efficiency, and Service Quality (disruptive technologies: blockchain, ML, & AI)” 8 <sup>th</sup> Meridian Clinical Trials, Continuum Globe, May 18 <sup>th</sup> , 2023. Speaker.
2023	“Blockchain use in Drug Development”. 7 <sup>th</sup> Meridian Clinical Trials, Outsourcing. Boston,

Massachusetts, USA. November 7<sup>th</sup> and 8<sup>th</sup>, 2022. Speaker.

2022 “Blockchain use in Drug Development”. 7<sup>th</sup> Meridian Clinical Trials, Outsourcing. Boston, Massachusetts, USA. November 7<sup>th</sup> and 8<sup>th</sup>, 2022. Speaker.

2022 76 Forward / Pennovation Center Science Round Table. August 9<sup>th</sup>, 2022. Moderator.

2022 76 Forward / Pennovation Center Science Round Table. Philadelphia, Pennsylvania. June 28<sup>th</sup>, 2022. Moderator.

2022 CTS strategy meeting, Q2, Boston, Massachusetts, USA. May 19<sup>th</sup>, 2022. Facilitator.

2022 “Blockchain Use in the Clinical Trial Supply Chain Management”. Outsourcing in Clinical Trials Westcoast. Burlingame, California. April 13<sup>th</sup>-14<sup>th</sup>, 2022. Speaker.

2022 76 Forward / Pennovation Center Science Round Table. March 30<sup>th</sup>, 2022. Panelist.

2022 “Using Blockchains to Improve Life Science Innovations at All Phases”. Outsourcing in Clinical Trials Southeast. Cary, North Carolina. March 29<sup>th</sup>-30<sup>th</sup>, 2022. Speaker.

2022 “Using Blockchain in Supply Chain Management to Reduce Cost and Increase Efficiency”. Clinical Trial Supply New England. Arena International. March 8<sup>th</sup>-9<sup>th</sup>, 2022. Closing Keynote Speaker.

2022 “Non Academic Career Track: Entrepreneurship and Venture Capital”, Jefferson’s Business and Biotechnology Group (BizBio). February 28<sup>th</sup>, 2022. Panelist.

2021 “Blockchain Technology in Clinical Trials”. Clinical Trials Virtual West Coast 2021. Procurement Direct. November 22<sup>nd</sup> & 23<sup>rd</sup>, 2021. Speaker.

2021 “Future is Now: Using Blockchain Technology to Power Clinical Trials”. Pharma Supplies and Logistics Nexus. Procurement Direct. November 19<sup>th</sup>, 2021. Keynote Speaker.

2021 “Blockchain and AI in Drug Development Supply Chain”. Vaccines Virtual Conference, 2021. 3<sup>rd</sup> Meridian Drug Discovery Program, November 18<sup>th</sup>-19<sup>th</sup>, 2021. Speaker.

2021 “Blockchain in Clinical Trials”. 6<sup>th</sup> Annual Clinical Trials Summit. November 4<sup>th</sup>, 2021. Speaker.

2021 “The Blockchain Conundrum: How can it (not) Benefit the Industry”. Clinical Trial Supply East Coast. October 20, 2021. Speaker.

2021 “Blockchain in Vaccine Development Constructing a Decentralized and Immutable Data Chain”. Vaccines Virtual Conference 2021. Procurement Direct, August 5<sup>th</sup>. Speaker.

2021 “Blockchain in Clinical Trials”. Outsourcing in Clinical Trials & Clinical Trial Supply Asia, June 29<sup>th</sup>-30<sup>th</sup>, 2021. Speaker.

2021 “Decentralized Clinical Trials using Decentralized Hyperledger Data-blocks Blockchain”. Fierce Pharma Supply Chain Transformation Summit. June 29<sup>th</sup>-30<sup>th</sup>, 2021. Speaker.

2021 “A.I & Disruptive Technology: Blockchain, Data mining, AI, and Disruptive Technologies”. Clinical Operations Meeting. Proventa International. Princeton, New Jersey. June 15<sup>th</sup>, 2021. Moderator.

2021 “Blockchain, Data Mining, AI, and Disruptive Technologies”. Clinical Operations Strategy Meeting. Proventa International. June 15<sup>th</sup>, 2021. Panel Facilitator.

2021 "Implementing Blockchain to Power a Hyper-Efficient Drug Development". 6<sup>th</sup> Clinical Trials Strategic Summit, June 9<sup>th</sup>, 2021. Keynote Speaker.

2021 "Blockchain – Exploring the Implications for the Future". OCT East Coast Conference. Online, May 25<sup>th</sup> & 26<sup>th</sup>, 2021. Speaker.

2021 "What are the best machine learning and artificial intelligence applications today and in development to enhance collaborative database sharing to achieve rapid and effective drug target discovery?" Structural Biology Round Table Discussion. Biology –Strategy Meeting East Coast USA. May 17<sup>th</sup>, 2021. Hyatt Regency, Princeton, New Jersey. Session Chair.

2021 "Blockchain is a Foundational Disruptive Technology Required in Propelling Drug Development Forward". Outsourcing in Clinical Trials Southeast – Virtual. Arena International. March 30<sup>th</sup> & 31<sup>st</sup>, 2021. Speaker.

2021 "New Technology for Temperature Controlled Logistics: How AI and Blockchain Can Support the Industry". Temperature Controlled Logistic Biopharmaceuticals 2021- a virtual event. Arena International. March 24<sup>th</sup>-25<sup>th</sup>, 2021. Speaker.

2021 "LoT, digitalization and data-driven technologies for temperature-controlled logistics". Temperature Controlled Logistic Biopharmaceuticals 2021: a virtual event. Arena International. March 24<sup>th</sup>-25<sup>th</sup>, 2021. Panelist.

2021 "Digital Innovation and Transforming Pharma and Biotech Supply Chains". Digital Innovation and Transforming Pharma and Biotech Supply Chains Temperature Control & Logistics AMG World. April 28<sup>th</sup>, 2021. Moderator.

2021 "Entrenching Trust in Rapidly Decentralized Drug Development Landscape Using Blockchain Technology". 2<sup>nd</sup> Virtual Digital Transformation, Lock-down and E-Clinical Services. Platinum Global Solutions. February 23<sup>rd</sup>, 2021. Speaker.

2020 "Blockchain in Clinical Trials". Outsourcing in Clinical Trials Southeast. Durham, North Carolina. OCT Southeast. November 17<sup>h</sup> and 18<sup>th</sup>, 2020. Speaker.

2020 Speaker and Round Table Facilitator for "Disruptive Technologies implementation in Drug Development is Required and NOT an Option". Online Clinical Trial Supply Chain Strategy Meeting 2020. Proventa International. November 18<sup>th</sup>, 2020.

2020 "Adopting Disruptive Technologies in Drug Development is Not Optional for Survival". Online Clinical Operations Strategy Meeting. Proventa International. November 16<sup>th</sup>, 2020. Speaker and Round Table Facilitator.

2020 "AI and Drug Discovery Industry" Online 4<sup>th</sup> Drug Discovery Summit 2020. Platinum Global Solutions Ltd., November 12<sup>th</sup>, 2020. Speaker and Panelist.

2020 "Clinical Data in Serial Blocks (Blockchain) that are Immutable and Trustless" 3<sup>rd</sup> Meridian Clinical Trials Summit. November 2<sup>nd</sup> & 3<sup>rd</sup>, 2020. Speaker.

2020 "Educational Outreach: Opportunities in Biotech" Focus on Pharmacology. American Society for Pharmacology and Experimental Therapeutics Virtual Series. MAPS Biotech Roundtable. October 30<sup>th</sup>, 2020. Speaker and Panelist.

2020 "Entrenching Trust in Rapidly Decentralized Drug Development Landscape Using Blockchain Technology". Advance Your Clinical Edge Through Technology, Supply Chain Management, Regulatory Guidance, and Protocol Design Innovation. Clinical Innovation & Supply Chain Management. Informa Connect. Philadelphia Marriott

Downtown, Philadelphia, PA. October 27<sup>th</sup> to 30<sup>th</sup>, 2020. Speaker.

2020 “Direct to Patient” Advance Your Clinical Edge Through Technology, Supply Chain Management, Regulatory Guidance and Protocol Design Innovation. Clinical Innovation & Supply Chain Management. Informa Connect. Philadelphia Marriott Downtown, Philadelphia, PA. October 27<sup>th</sup> to 30<sup>th</sup>, 2020. Session Chair.

2020 “Envisioning Drug Development in a Hyperledger Ecosystem – One Block(chain) at a time”. Outsourcing in Clinical Trials Europe Virtual, Europe. Arena International. October 26<sup>th</sup> and 27<sup>th</sup>, 2020. Keynote Speaker.

2020 “Disrupt or be Disrupted: Technological Advancements are not Optional” Clinical Trial Supply Virtual. Clinical Trial Supply East Coast – Arena International. October 14<sup>th</sup>-15<sup>th</sup>, 2020. Speaker.

2020 “Envisioning Drug Development in a Hyperledger Ecosystem – One Block(chain) at a time”. Precision in Clinical Trials Summit, Boston, MA. Precision Evolution Global. October 13<sup>th</sup> and 14<sup>th</sup>, 2020. Keynote Speaker.

2020 “How has COVID-19 Affected Your Trial and What Impact Has it Had on Your Partnerships” Outsourcing in Clinical Trials USA Virtual. Arena International. September 30<sup>th</sup> – October 1<sup>st</sup>, 2020. Session Chair.

2020 “Contextual Framework for Using Blockchain in Clinical Trials” Outsourcing in Clinical Trials USA Virtual. Arena International. September 30<sup>th</sup> – October 1<sup>st</sup>, 2020. Speaker

2020 “Q&A in Innovations and Data Management in Monitoring the Temperature of Your Product”. Clinical Trial Supply Midwest, Chicago, IL. September 23<sup>rd</sup>-24<sup>th</sup>, 2020. Session Chair.

2020 “Benefits and Advantages of using blockchain to conduct Decentralized Clinical Trials during and beyond Covid-19 Pandemic” Vaccines 2020 – Virtual Conference. Arena International. August 12<sup>th</sup>, 2020. Speaker.

2020 “Benefits and Advantages of Using Blockchain to Conduct Decentralized Clinical Trials During and Beyond the Covid-19 Pandemic”. Direct to Patient and Virtual Clinical Trial Event. Arena International. July 9<sup>th</sup>, 2020. Closing Keynote.

2020 “The New Normal: Will Decentralized Trials Be the Future of the Clinical Trials?”. Direct to Patient and Virtual Clinical Trial Event. Arena International. July 9<sup>th</sup>, 2020. Closing Keynote.

2020 “Innovations and Data Management in Monitoring the Temperature of Your Product”. Clinical Trial Supply Southern California, San Diego, CA. June 23<sup>rd</sup>-24<sup>th</sup>, 2020. Keynote Speaker.

2020 “Blockchain, Machine Learning, and Artificial Intelligence in Clinical Trials” Clinical Online Strategy Meeting. Proventa International. June 3<sup>rd</sup>, 2020. Facilitator

2020 “Contextual Framework for using Blockchain in Clinical Trials” Outsourcing in Clinical Trials. Virtual Experience. May 27<sup>th</sup>, 2020. Speaker.

2020 “Hyper Immutable data (blockchain) application in clinical trials” 5<sup>th</sup> Clinical Trials Virtual Nexus, USA. Procurement Direct, April 23<sup>rd</sup> & 24<sup>th</sup>, 2020. Keynote Speaker.

2020 "Where is the Industry Headed?" Temperature Controlled In Biopharmaceuticals, A virtual Arena Online Conference, April 8<sup>th</sup>, 2020. Opening Keynote Speaker.

2020 "Blockchain in Clinical Trials" 8<sup>th</sup> Annual Clinical Trial Supply Chain New England, Arena International, March 24<sup>th</sup> & 25<sup>th</sup>, 2020. Boston, MA. Speaker.

2020 "Artificial Intelligence in Clinical Trials" 8<sup>th</sup> Annual Clinical Trial Supply Chain New England. Arena International, March 24<sup>th</sup> & 25<sup>th</sup>, 2020. Boston, MA. Roundtable leader

2019 "How Blockchain Could Revolutionize Clinical Operations" B2B 7<sup>th</sup> Clinical Operations Strategy Meeting. Boston, USA. Proventa International, November 19<sup>th</sup> 2019. Moderator.

2019 Clinical Operations Strategy Meeting. Boston, MA. November 19<sup>th</sup>, 2019. Thought Leader and Roundtable Facilitator.

2019 "Blockchain Applications in Clinical Trials" Clinical Trials Midwest 2019. Chicago, Illinois. October 29<sup>th</sup> – 30<sup>th</sup>. Roundtable Facilitator.

2019 "Blockchain – Providing the Contextual Framework" Clinical Trial Supply Southeast. Raleigh-Durham, NC. October 2<sup>nd</sup> & 3<sup>rd</sup>, 2019. Speaker.

2019 "Blockchain for clinical trials - The who, the what, the how" T3: Trials, Tech, and Transformation. Philadelphia, PA. August 8<sup>th</sup>- 9<sup>th</sup>, 2019. Speaker.

2019 Keynote Presentation for the Clinical Trial Supply Chain Strategy Meeting. Boston, MA. June 13<sup>th</sup>, 2019. Keynote Speaker.

2019 "Strategic Partnering Through Blockchain Technology" Clinical Trial Supply Chain Strategy Meeting. Boston, MA. June 13<sup>th</sup>, 2019. Roundtable Facilitator.

2019 "Is blockchain an overkill solution for the power and distribution of data or will it revolutionize clinical trials?" Outsourcing in Clinical Trials. King of Prussia, PA. May 21<sup>st</sup> – 22<sup>nd</sup>, 2019. Speaker.

2019 "Restoring beta cells in diabetes using a small molecule curative" Stem cell, Tissue Engineering and Regenerative Medicine. Amsterdam, Netherlands. March 25-26, 2019. Speaker.

2019 "Identifying the Right CRO Partner for Your Organization and Key Projects Through Blockchain Technology." RO Quality Management and Oversight. CBI, a Division of UBM Americas. March 7<sup>th</sup>-8<sup>th</sup> 2019. Boston MA. Speaker.

2018 "Optimizing drug development cost and efficiency from biology to patient" B2B Biology Strategy Meeting USA East Coast 2018. November 14<sup>th</sup>, 2018. Speaker.

2018 B2B Biology Strategy Meeting USA East Coast 2018. Boston, MA. November 14<sup>th</sup>, Content Contributor.

2018 "Leveraging Forecasting and Planning Tools and Strategies to Accurately Plan Your Clinical Trials, Avoid Disruption, Overages, and Shortage" Clinical Trial Supply Conference Meeting. King of Prussia, PA. October 13<sup>th</sup> and 14<sup>th</sup>, 2018. Panelist.

2018 "How Blockchain Technologies Can Revolutionize Clinical Trial Supply Chain" Clinical Trial Supply Conference Meeting. King of Prussia, PA October 16<sup>th</sup> and 17<sup>th</sup>, 2018.

Speaker.

2018 “The Intelligent Trial: Preparing for the Future – Is Artificial Intelligence Taking Over?” Clinical Trial Supply Conference Meeting. Durham, NC. October 3<sup>rd</sup> and 4<sup>th</sup>, 2018. Panelist.

2018 “Partnerships: Making most out of collaborations” Clinical Trial Supply Conference Meeting. Durham, NC. October 3<sup>rd</sup> and 4<sup>th</sup>, 2018. Speaker.

2018 “Blockchain and Clinical Supply Chain – great promises ahead when two chains link as one” Clinical Trial Supply Midwest 2018. September 13<sup>th</sup> and 14<sup>th</sup>, 2018. Chicago, Illinois. Speaker.

2018 “How will technologies reshape the end-to-end clinical supply chain management to Improve quality and efficiency and create value for the customers?” 4th Clinical Trial Supply Chain Strategy Meeting. Boston, USA. Proventa International, June 13<sup>th</sup> 2018. Speaker.

2018 “Defining a Good Collaborative Model among Stakeholders to Drive Pharmaceutical Innovation”, 2<sup>nd</sup> Clinical Trials Nexus 2018, by Procurement Direct, Boston, MA. May 14<sup>th</sup>-15<sup>th</sup>, 2018. Invited Keynote Speaker on Innovation Tract and as a Panelist.

2018 “Partnerships and Collaboration” T3: Trials, Tech and Transformation 2018, by Knect365. Raleigh, NC. May 30<sup>th</sup> – 31<sup>st</sup>. Speaker, Moderator, and Panelist.

2018 “Technologies used to shape the end-to-end clinical supply chain”. Clinical Trial Supply New England, March 7<sup>th</sup> & 8<sup>th</sup>, 2018, Boston, MA. Speaker.

2018 “Designing and Engineering Antibody Therapeutics for Difficult to Target Proteins” B2B Biology Strategy Meeting USA East Coast 2018. Boston, MA. November 14<sup>th</sup>, 2018. Moderator.

2017 “Restoring Pancreatic Islet to Reverse Diabetes” PACT Philadelphia Capital Conference, Philadelphia, PA, November 3<sup>rd</sup>. 2017. Speaker.

2017 “Restoring Pancreatic Islet to Reverse Diabetes” Life Science Pennsylvania, Wayne PA, November 14<sup>th</sup>. 2017. Speaker.

2017 “Temperature Maintenance Through the Adoption and Utilization of the Latest Technology” 15<sup>th</sup> Clinical Trial Supply East Coast Conference, hosted by Arena International on October 18<sup>th</sup> – 19<sup>th</sup>, Princeton, NJ. Speaker.

2017 “Exploring key aspects that need to be addressed as a start-up company moving from the preclinical the clinical space to make this transition as smooth as possible”. Outsourcing in Clinical Trials. East Coast, 2017 on May 23<sup>rd</sup>- 24<sup>th</sup>, King of Prussia, Pennsylvania. Speaker.

2017 “Temperature Controlled Logistics in Biopharmaceuticals” Outsourcing in Clinical Trials. East Coast, May 16<sup>th</sup> -17<sup>th</sup>, 2017 Princeton, New Jersey. Speaker.

2017 “Innovations in Drug Development”, Trials, Tech and Transformation on May 11<sup>th</sup> – 12<sup>th</sup>, Orlando, Florida. Speaker.

2017 “Seed Money and Beyond: Improving flow of investment funds to our regions” 4<sup>th</sup> Annual Life Science Collaborative Conference on Why Invest in Philadelphia Now:

Converting Risk Capital to Success Stories” March 7<sup>th</sup>, 2017. Philadelphia, PA. Head of the panel organizing committee.

2016 “Improving Relationships with Start-Up CROs to Ensure Both Get the Most out of the Partnership” Preclinical Development Operations Summit. October 31<sup>st</sup> - November 1<sup>st</sup>, 2016. Boston, MA. Speaker.

2016 “Beyond the A Round” at the annual conference of Pharmaceutical Consulting Consortium International (PCCI) on December 12, 2016, in Wayne, PA. Pitch Speaker.

2016 “Evaluating the Changing Preclinical Development Landscape to Determine Consequences and Opportunities for Both Sponsor Companies and Vendors”. Preclinical Development Operations Summit 2016 on November 15<sup>th</sup>-16<sup>th</sup>, Boston, MA. Panelist.

2016 “Best Practices for Finding Reliable Service Providers to Ensure Preclinical Studies are Carried out to Quality Standard for Emerging Companies”. Preclinical Development Operations Summit 2016 on November 15<sup>th</sup> and 16<sup>th</sup>, Boston, MA. Speaker.

2016 Preclinical Development Operations Summit 2016 on November 15<sup>th</sup> and 16<sup>th</sup>, Boston, MA. Conference Chair.

2016 “Highlighting Technological Advancements in the Field of Clinical Trial Supply to Increase Efficiency and Ensure You Stay Ahead of the Curve”. 14<sup>th</sup> Annual Clinical Trial Supply East Coast, 2016. Speaker.

2016 “Biotech Round Table – Paths to Biotech” Mid-Atlantic Pharmacology Society. October 27<sup>th</sup>, 2016. Philadelphia, PA. Speaker and Panelist.

2016 14<sup>th</sup> Annual Clinical Trial Supply East Coast 2016 on October 20<sup>th</sup>, 2016. Panel Moderator.

2016 “Managing Your Temperature Maintenance through the Adoption and Utilization of the Latest Technology” 14<sup>th</sup> Annual Clinical Trial Supply East Coast 2016 on October 20<sup>th</sup>, 2016. Panel Discussion.

2016 “Constructing a “Qualified Provider Model” to Reduce Time Spent in Vendor Sourcing and Selection” 7<sup>th</sup> Annual Outsourcing in Clinical Trials East Coast 2016 on May 26<sup>th</sup>, Philadelphia, PA. Speaker.

2016 “Trials and Tribulations: Mitigating the Risk in Clinical Research” 8<sup>th</sup> Annual American Clinical Research Professionals on March 31<sup>st</sup>, Conshohocken, PA. Speaker.

2015 “Restoring Pancreatic Beta Cells Using Small Molecule Curative for Type 2 Diabetes”. Development Center for Biotechnology, Taiwan. Speaker.

2014 Annual Case Competitions for Penn Graduate Consulting Club (PGCC). Speaker.

2014 University of Pennsylvania Entrepreneur Forum, Philadelphia, PA. Table Presentation.

2013 PA Bio Presenter, Philadelphia, PA. Table Presentation.

2013 TechConnect National Meeting, Washington DC, Pitch Session Speaker.

2012 PA Bio Presenter, Philadelphia, PA. Poster Presentation.

2011 PA Bio Venture meeting, Philadelphia, PA. Speaker.

2010	Neuroendocrine tumor meeting at Boston, MA. Speaker.
2010	AACR 101st General Meeting, Washington D.C. Poster Presentation.
2009	AACR Frontiers in Basic Cancer Research, Boston, MA. Poster Presentation.
2009	NANETS meeting at Charlotte, NC. Poster Presentation.
2009	<i>Scaling Up the Recombinant Monoclonal Antibodies Production in Bioreactor</i> at the CESCO Bioengineering Co., Ltd., Taiwan. Speaker.
2008 – 2009	Annual cancer genomics meeting at the Cancer Institute of NJ, NJ. Speaker.
2008	North American Neuroendocrine Tumor Society (NANETS) meeting in Bermuda. Speaker
2008	Epithelial-Mesenchymal Transition meeting at Cold Spring Harbor, NY. Speaker.
2007 – 2009	Annual Cancer Institute of NJ retreat at Piscataway, NJ. Speaker.
2005	Keystone G-Protein Coupled Receptor meeting at Keystone, Colorado. Poster Presenter.
2004 – 2006	Annual Cancer Institute of NJ retreat at Princeton, NJ. Poster Presenter.
2003 – 2006	Annual Neuroendocrine Tumor Meeting at Banbury, NY. Speaker.

## PROFESSIONAL MEMBERSHIP AND COMMITTEE

2009 – 2022	American Association for Cancer Research (AACR) Active Member
2010 – Present	The Science Advisory Board
2004 – 2020	American Association for the Advancement of Science (AAAS)
2004 – 2020	New York Academy of Sciences (NYAS)
2009 – Present	The Epithelial-Mesenchymal Transition International Association (TEMETIA)
2012 – 2020	Life Sciences PA
2013 – Present	American Diabetes Association (ADA)
2014 – Present	American Association of Diabetes Educators
2014 – Present	Life Sciences Collaborative Group Member
2014 – 2017	Life Sciences Collaborative Advisory Board Member
2014 – 2018	Life Sciences Collaborative Event Planning Committee
2014 – 2017	Life Sciences Future Investors Outreach Committee
2014 – Present	Laboratory Robotics Interest Group (LRIG)
2016 – 2018	Laboratory Robotics Interest Group (LRIG) Steering Committee
2017 – 2020	Cornell Club in Manhattan, NY
2016 – 2017	Women in Bio – Boardroom Ready Coach
2014 – 2016	American College of Sports Medicine
2008 – 2011	North American Neuroendocrine Tumor Society (NANETS)

## PUBLICATIONS

### PEER REVIEWED

1. **Leu FP**, Hingorani MM, Turner J, O'Donnell M. The delta subunit of DNA polymerase III holoenzyme serves as a sliding clamp unloader in *Escherichia coli*. *J Biol Chem.* 2000 Nov 3;275(44):34609-18.
2. Yao N, **Leu FP**, Anjelkovic J, Turner J, O'Donnell M. DNA structure requirements for the *Escherichia coli* gamma complex clamp loader and DNA polymerase III holoenzyme. *J Biol Chem.* 2000 Apr 14;275(15):11440-50.
3. **Leu FP** and O'Donnell M. Interplay of clamp loader subunits in opening the beta sliding clamp of

*Escherichia coli* DNA polymerase III holoenzyme. *J Biol Chem.* 2001 Dec 14;276(50):47185-94. Epub 2001 Sep 25.

4. **Leu FP**, Georgescu R, O'Donnell M. Mechanism of the *E. coli* tau processivity switch during lagging-strand synthesis *Mol Cell.* 2003 Feb;11(2):315-27; PMID:12620221
5. Lopez de Saro F, Georgescu RE, **Leu F**, O'Donnell M. Protein trafficking on sliding clamps. *Philos Trans R Soc Lond B Biol Sci.* 2004 Jan 29;359(1441):25-30; PMID:15065653
6. **Leu, FP**, Niu, C., and Nandi, M. The effect of transforming growth factor beta on human neuroendocrine tumor BON cell proliferation and differentiation is mediated through somatostatin. *Molecular Cancer Research* 2008 June;6(6):1029-1042; PMID:18567806
7. **Leu, FP**, Nandi, M., and Wong, C. Somatostatin Receptor Activation by Agonist-like Antibodies can Reverse miR-200c/ZEB1 Dependent Cell Dedifferentiation and Increase Cell Death in Neuroendocrine Tumor Cells. *Abstract. Pancreas* 2010 March;39(2): 274
8. **Leu FP** and Nandi M, GPCR Somatostatin Receptor Extracellular Loop 2 is a Key Ectodomain for Making Subtype Selective Antibodies with Agonist-Like Activities in Pancreatic Neuroendocrine Tumor Bon Cell Line, *Pancreas* 2010 Nov;39(8):1155-66; PMID: 20531241

### **PATENT RELATED**

**Leu, F.P.**, *Polyclonal Antibodies to human somatostatin receptor and methods of use*, 2008 (<https://www.google.com/patents/WO2008134538A2?cl=en>)

**Leu, F.P.**, *Monoclonal Antibodies to Human Somatostatin Receptor and Methods of Use*, 2009 (<http://www.patentsencyclopedia.com/app/20090016989>)

**Leu, F.P.**, *Sielecki, T., and Vacca, J., Menin Inhibitors and Methods of Beta Cells Regeneration*, Provisional on May 19, 2018

### **INDUSTRY PUBLICATIONS**

**Leu, F.P.**, “Humanizing Artificial Intelligence in BioPharma and Healthcare by Using Blockchain as Information Gatekeeper”. *Pharma Focus Asia*, to be published May 28<sup>th</sup>, 2025.

**Leu, F.P.**, “Top Use Cases for Artificial Intelligence, Machine Learning, and Blockchain within Drug Development”. *Pharma Focus Asia*, Issue 55, Pages 58-59, 2024.

**Leu, F.P.**, “Powering Decentralized Drug Development - Enabling Downstream Disruptive Technologies to Generate High-Fidelity Output”. *Pharma Focus Asia*, Issue 53, Pages 26-28. 2023.

**Leu, F.P.**, “Blockchain is Mandatory in Constructing a High-fidelity Database Readyng for Downstream Disruptive Technologies, such as for The Artificial Intelligence Training”. *Pharma Focus Asia*, Issue 51, 2023.

**Leu, F.P.**, “Blockchain and Drug Supply Chain”. *H1 Virtual Events – Reviews and Summary Handbook*, Blockchain, Page 33 – 35. Arena International Events Group. 2021.

**Leu, F.P. Interviewed by Charlotte Di. Salvo** “Emerging Disruptive Technologies in the Pharmaceutical Industry: An Interview with Frank Leu, Novapeutics” *Pharma Features*, September 24, 2021.

**Leu, F.P.**, “Blockchain enables machine learning and AI to drive a hyper-efficient trial”. *Features. Clinical Trials*. Arena International Events Group. June 16, 2020.

**Leu, F.P.**, “Market Analysis Report on Stem Cells”. 3rd Global Conference on Tissue Engineering and Regenerative Medicine, Stem Cell Research June 29-30, 2020. *Journal of Cell Science & Therapy* Volume 12, Issue 2.

**Leu, F.P.**, “Blockchain Immutable Database Architecture Enables Machine Learning and Artificial Intelligence to Drive a Hyper-Efficient Clinical Trial”. *Oncology Handbook*. Arena Internationals. December 2020.

**Leu, F.P.**, “Blockchain Application in the Global Clinical Trial Supply Chain”. *Outsourcing in Clinical Trials Handbook*. Arena Internationals. 2020.

**Leu, F.P.** “Blockchain and Drug Development”. *Clinical Trial Supply Handbook Summer Edition*. Arena Internationals. June 2020.

**Leu, F.P.**, *Time to get hyper(ledger) Clinical Trial Supply Handbook – The go-to guide for professionals in the global clinical supply space*. Page 34 – 36. January 2020.

**Leu, F.P.** “Partnerships: How Blockchain Can Make the Most Out of Collaborations”, *Clinical Trial Supply Southeast*. Arena Clinical Trials Yearbook, 2019.

**Leu, F.P. & Tsingas, M.**, “2017 Highlight: Future Challenges and Innovative Solutions Presented at the 15<sup>th</sup> Clinical Trial Supply East Coast Conference, Arena International”, December 2017.  
<http://www.clinicaltrialsarena.com/news/supply-chain/2017-highlight-future-challenges-and-innovative-solutions-presented-at-the-15th-clinical-trial-supply-east-coast-conference-6006457>

**Leu, F.P.** Regulatory Challenges Facing the Clinical Supply Chain, Clinical Supply Handbook, December 2017.

**Leu, F.P. & Gonzalez, E.**, “Trials, Tech, and Transformation: A Conference for Clinical Trial Innovators”, Knect365. June 30<sup>th</sup>, 2017. <https://knect365.com/clinical-trials-innovation/article/00d4a5b6-4254-4e0c-a029-bc2454884cc5/t3-trials-tech-transformation-recap-innovators>

**Leu, F.P.** “A win-win Sponsor and Vendor Relationship in Today’s Drug Development”, Arena Clinical Trials Yearbook, 2016.

**Leu F.P.** “Can Rule 506(C) Raise the Early-Stage Companies Out of the 'Valley of Death”, The Sarian Biotech Bulletin Fall, 2015.

### **Peer Review Journal Reviewer:**

Cancer Chemotherapy  
Pharmacology and Novel Concepts in Cancer Metastasis  
Endocrine-related Cancer  
Pancreas

### **Miscellaneous Volunteering Activities:**

- Class parent
- Coach for the Odyssey of the Mind, High School.

### **SKILLS / EXPERTISE**

Pharmaceutical Business development; Drug Discovery and Development; Blockchain & Crypto Currency; Intellectual Property Licensing; Strategic Partnering; Preferred vendors management; Stake-holders management; Pre-clinical development and outsourcing; Clinical trial outsourcing; Blockchain technology in business and drug development; Regulation crowd funding and Regulation A+ fund raise; Company Tokenization; Conference production, organization and operation; Recombinant protein design, overexpression, and production; Biologic, macromolecule, and antibody drug design and development; Start-up biopharma development and management; Government grant writing (i.e. SBIR - Small Business Innovative Research Grant); Investment materials preparation (i.e. executive summary, slides-deck, and business plan writing and preparations) and pitch presentations; Patent writing and preparation; Cancer biology; Metabolic diseases; Pharmacology; Molecular biology; Enzymology; Real Estate Investment, Property management; Residential property ownership and rental management; commercial real estate ownership and rental management.

**LANGUAGES:** English, Chinese, & Taiwanese.