
KU-LUNG HSU

Department of Chemistry
University of Texas at Austin
100 E 24th St, Austin, TX 78712
NHB 6.406
Mail code: A5300
Office: 512-232-2146
Lab: 512-232-1764
E-mail: ken.hsu@austin.utexas.edu
Website: <http://hsulab.com>

EDUCATION

December 2008	Ph.D. in Biochemistry The University of Texas at Austin, Austin, TX
May 2002	B.S. in Biochemistry, <i>Summa Cum Laude</i> Louisiana State University

RESEARCH EXPERIENCE

2023-present	Stephen F. and Fay Evans Martin Endowed Associate Professor Department of Chemistry University of Texas at Austin, Austin, TX
2020-2023	Associate Professor Department of Chemistry University of Virginia, Charlottesville, VA Other affiliations: Member, UVA Cancer Center Joint Faculty Appointment in Department of Pharmacology
2015-2020	Assistant Professor Department of Chemistry University of Virginia, Charlottesville, VA
2009-2015	Hewitt Foundation for Medical Research Postdoctoral Fellow The Scripps Research Institute, La Jolla, CA Advisor: Professor Benjamin F. Cravatt
2004-2009	Graduate Research Assistant Department of Chemistry and Biochemistry, The University of Texas at Austin, Austin, TX Advisor: Professor Lara K. Mahal Dissertation: A Systems Approach to Analyzing Bacterial Glycans and Glycan-Binding Proteins
2002-2004	Research Scientist

Elliott, Elliott, Head Breast Cancer Research & Treatment Center,
Baton Rouge, LA

2001-2002

Howard Hughes Medical Institute Undergraduate Research Fellow
Department of Biological Sciences, Louisiana State University,
Baton Rouge, LA

AWARDS

CPRIT Recruitment of Rising Stars (2022)

The Mark Foundation for Cancer Research Emerging Leader Award (2021)

NSF CAREER (2020)

Melanoma Research Alliance Young Investigator Award (2018)

DOD Peer Reviewed Cancer Research Program Career Development Award (2016)

NIH K99/R00 Pathway to Independence Award (2015)

Hewitt Foundation for Medical Research Postdoctoral Fellowship, TSRI (2011-2014)

NIH Ruth L. Kirschstein National Research Service Award Postdoctoral Fellowship, TSRI (declined)

University Continuing Graduate Fellowship, UT Austin (2007-2008)

R. B. & Margaret Lewis Endowed Presidential Fellowship in Biochemistry, UT Austin (2006-2008)

Robert A. Welch Fellowship Award, UT Austin (2006)

Dean's Professional Development Award, UT Austin (2005)

Robert H. Hamilton/Eugene P. Schoch Fellowship, UT Austin (2004-2005)

Summa Cum Laude, LSU (2002)

Phi Beta Kappa, LSU (2002)

Dean Arthur R. Choppin Outstanding Scholars in Biochemistry, LSU (2001-2002)

Howard Hughes Medical Institute (HHMI) Undergraduate Research Fellowship, LSU (2001-2002)

PUBLICATIONS

Links to all published work at MyBibliography:

<http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/46048332/?sort=date&direction=descending>

*Co-authors and contributed equally to this work; §co-corresponding authors

Journal Articles

Publications (graduate students and postdoctoral fellows from my group are underlined; undergraduate students are highlighted by underline and # symbol)

74. Chen M, Shin M, Donvito G, Muchhala KH, Mischel R, Mustafa MA, Serbulea V, Upchurch CM, Leitinger N, Akbarali HI, Lichtman AH, and **Hsu KL**. Endocannabinoid biosynthetic enzymes regulate pain response via LKB1-AMPK signaling *Proceedings of the National Academy of Sciences* (in press).
73. Heindel AJ, Brulet JW, Wang X, Founds MW, Libby AH, Bai DL, Lemke MC, Leace DM, Harris TE, Hafner M, and **Hsu KL**. Chemoproteomic capture of RNA binding activity in living cells *Nature Communications* 14, 6282 (2023).
72. Mendez R, Shaikh MS, Lemke MC, Yuan K, Libby AH, Bai DL, Ross MM, Harris TE, and **Hsu KL**. Predicting small molecule binding pockets on diacylglycerol kinases using chemoproteomics and AlphaFold *RSC Chemical Biology* 4, 422-430 (2023).
71. Ciancone AM*, Seo KW*, Chen M*, Borne AL, Libby AH, Bai DL, Kleiner RE[§], and **Hsu KL[§]**. Global discovery of covalent modulators of ribonucleoprotein granules *Journal of the American Chemical Society* 145, 11056-11066 (2023).
70. Brulet JW*, Ciancone AM*, Yuan K*, and **Hsu KL**. Advances in activity-based protein profiling of functional tyrosines in proteomes *Israel Journal of Chemistry* 63, e202300001 (2023).

69. Ciancone AM, Hosseinibarkooie S, Bai DL, Borne AL, and **Hsu KL**. Global profiling identifies a stress-responsive tyrosine site on EDC3 regulating biomolecular condensate formation *Cell Chemical Biology* 29, 1709-1720 (2022).
68. Grams RJ and **Hsu KL**. Catch your breath *Nature Chemical Biology* 18, 686-687 (2022).
67. Ozturk H, Cingoz H, Tufan T, Yang J, Adair SJ, Tummala KS, Kuscu C, Kinali M, Comertpay G, Nagdas S, Goudreau BJ, Luleyap HU, Bingul Y, Ware TB, Hwang WL, **Hsu KL**, Kashatus DF, Ting DT, Chandel NS, Bardeesy N, Bauer TW, and Adli M. ISL2 is a putative tumor suppressor whose epigenetic silencing reprograms the metabolism of pancreatic cancer *Developmental Cell* 57, 1331-1346 (2022).
66. Grams RJ and **Hsu KL**. Reactive chemistry for covalent probe and therapeutic development *Trends in Pharmacological Sciences* 43, 249-262 (2022).
65. McCloud RL*, Yuan K*, Mahoney KE, Bai DL, Shabanowitz J, Ross MM, Hunt DF, and **Hsu KL**. Direct target site identification of a sulfonyl-triazole covalent kinase probe by LC-MS chemical proteomics *Analytical Chemistry* 93, 11946-11955 (2021).
64. Hussain SS, Tran T, Ware TB, Luse MA, Prevost CT, Ferguson AN, Kashatus JA, **Hsu KL**, and Kashatus DF. RalA and PLD1 promote lipid droplet growth in response to nutrient withdrawal *Cell Reports* 36, 109451 (2021).
63. Ware TB and **Hsu KL**. Advances in chemical proteomic evaluation of lipid kinases – DAG kinases as a case study *Current Opinion in Chemical Biology* 65, 101-108 (2021).
62. Nass SR, Steele FF, Ware TB, Libby AH, **Hsu KL**, and Kinsey SG. Monoacylglycerol lipase inhibition using JZL184 attenuates paw inflammation and functional deficits in a mouse model of inflammatory arthritis *Cannabis and Cannabinoid Research* 6, 233-241 (2021).
61. Cao JK, Viray K, Shin M, **Hsu KL**, Mackie K, Westenbroek R, and Stella N. ABHD6 inhibition rescues a sex-dependent deficit in motor coordination in the *HdhQ^{200/200}* mouse model of Huntington's disease *Journal of Neurology and Neurological Disorders* 7, 1-16 (2021).
60. Toroitich EK*, Ciancone AM*, Hahm HS, Brodowski SM#, Libby AH, and **Hsu KL**. Discovery of a cell-active SuTEx ligand of prostaglandin reductase 2 *ChemBioChem* 22, 2134-2139 (2021).
59. **Hsu KL**. Shining a light on phenotypic drug discovery *Cell Chemical Biology* 28, 115-117 (2021).
58. Huang T, Hosseinibarkooie S, Borne AL, Granade ME, Brulet JW, Harris TE, Ferris HA, and **Hsu KL**. Chemoproteomic profiling of kinases in live cells using electrophilic sulfonyl triazole probes *Chemical Science* 12, 3295-3307 (2021).
57. Borne AL, Brulet JW, Yuan K, and **Hsu KL**. Development and biological applications of sulfur-triazole exchange (SuTEx) chemistry *RSC Chemical Biology* 2, 322-337 (2021).
56. Georgiev GA, Gh MS, Romano J, Teixeira KLD, Struble C, Ryan D, Sia K, Kitt JP, Harris JM, **Hsu KL**, Libby AH, Odrich MG, Suarez T, McKown R, and Laurie GW. Lacritin proteoforms prevent tear film collapse and maintain epithelial homeostasis *Journal of Biological Chemistry* 296, 100070 (2021).
55. Seki SM, Posyniak K, McCloud RL, Rosen DA, Fernandez-Castaneda A, Beiter RM, Hayes N, Spivey C, Gemta L, Bullock TNJ, **Hsu KL**, and Gaultier A. Modulation of PKM activity affects the differentiation of Th17 cells *Science Signaling* 13, eaay9217 (2020).
54. Brulet JW, Borne AL, Yuan K, Libby AH, and **Hsu KL**. Liganding functional tyrosine sites on proteins using sulfur-triazole exchange chemistry *Journal of the American Chemical Society* 142, 8270-8280 (2020).
53. Shin M*, Ware TB*, and **Hsu KL**. DAGL-beta functions as a PUFA-specific triacylglycerol lipase in macrophages *Cell Chemical Biology* 27, 314-321 (2020).
52. Ware TB, Franks CE, Granade ME, Zhang M, Kim KB, Park KS, Gahlmann A, Harris TE, and **Hsu KL**. Reprogramming fatty acyl specificity of lipid kinases via C1 domain engineering *Nature Chemical Biology* 16, 170-178 (2020).
51. Yin B, Mendez R, Zhao X, Rakhit R, **Hsu KL**, and Ewald S. Automated Spatially Targeted Optical Micro Proteomics (autoSTOMP) to Determine Protein Complexity of Subcellular Structures *Analytical Chemistry* 92, 2005-2010 (2020).
50. Hahm HS*, Toroitich EK*, Borne AL*, Brulet JW*, Libby AH, Yuan K, Ware TB, McCloud RL, Ciancone AM, and **Hsu KL**. Global targeting of functional tyrosines using sulfur triazole exchange chemistry *Nature Chemical Biology* 16, 150-159 (2020). PMID: PMC6982592

49. Lazo JS, Blanco IK, Tasker NR, Rastelli EJ, Burnett JC, Garrott SR, Hart DJ, McCloud RL, **Hsu KL**, Wipf P, and Sharlow ER. Next-generation cell-active inhibitors of the undrugged oncogenic PTP4A3 phosphatase *Journal of Pharmacology and Experimental Therapeutics* 371, 652-662 (2019).
48. Franks CE and **Hsu KL**. Activity-based kinome profiling using chemical proteomics and ATP acyl phosphates *Current Protocols in Chemical Biology* 11, e72 (2019).
47. Ware TB*, Shin M*, and **Hsu KL**. Metabolomics analysis of lipid metabolizing enzyme activity *Methods in Enzymology* 626, 407-428 (2019).
46. Shin M, Buckner A, Prince J, Bullock TNJ, and **Hsu KL**. Diacylglycerol lipase-beta is required for TNF-alpha response but not CD8+ T cell priming capacity of dendritic cells *Cell Chemical Biology* 26, 1036-1041 (2019).
45. Shin M*, Ware TB*, Lee HC[§], and **Hsu KL**[§]. Lipid-metabolizing serine hydrolases in the mammalian central nervous system *Biochimica et Biophysica Acta* 1864, 907-921 (2019).
44. Borne AL*, Huang T*, McCloud RL*, Pachaiyappan B*, Bullock TNJ, and **Hsu KL**. Deciphering T cell immunometabolism with activity-based protein profiling. *Current Topics in Microbiology and Immunology* 420, 175-210 (2019).
43. Campbell ST*, Franks CE*, Borne AL*, Shin M, Zhang L#, and **Hsu KL**. Chemoproteomic discovery of a ritanserin-targeted kinase network mediating apoptotic cell death of lung tumor cells *Molecular Pharmacology* 94, 1246-1255 (2018).
42. Manterola A, Bernal-Chico A, Cipriani R, Ruiz A, Pérez-Samartín A, Moreno-Rodríguez M, **Hsu KL**, Cravatt BF, Brown JM, Rodríguez-Puertas R, Matute C, Mato S. Re-examining the potential of targeting ABHD6 in multiple sclerosis: Efficacy of systemic and peripherally restricted inhibitors in experimental autoimmune encephalomyelitis. *Neuropharmacology* 141, 181-191 (2018).
41. Manterola A, Bernal-Chico A, Cipriani R, Canedo-Antelo M, Moreno-Garcia A, Martin-Fontecha M, Perez-Cerda F, Sanchez-Gomez MV, Ortega-Gutierrez S, Brown M, **Hsu KL**, Cravatt BF, Matute C, and Mato S. Deregulation of the endocannabinoid system and therapeutic potential of ABHD6 blockade in the cuprizone model of demyelination. *Biochemical Pharmacology* 157, 189-201 (2018).
40. Curry Z, Wilkerson J, Bagdas D, Kyte S, Patel N, Donvito G, Mustafa MA, Poklis J, Niphakis M, **Hsu KL**, Cravatt BF, Gewirtz DA, Damaj MI, and Lichtman AH. Monoacylglycerol lipase inhibitors reverse paclitaxel-induced nociceptive behavior and proinflammatory markers in a mouse model of chemotherapy-induced neuropathy. *Journal of Pharmacology and Experimental Therapeutics* 366, 169-183 (2018).
39. Wilkerson JL, Curry ZA, Kinlow PD, Mason BL, **Hsu KL**, van der Stelt M, Cravatt BF, and Lichtman AH. Evaluation of different drug classes on transient sciatic nerve injury-depressed marble burying in mice. *Pain* 159, 1155-1165 (2018).
38. Shin M, Franks CE, and **Hsu KL**. Isoform-selective activity-based profiling of ERK signaling. *Chemical Science* 9, 2419-2431 (2018).
37. McCloud RL*, Franks CE*, Campbell ST*, Purow BW, Harris TE, and **Hsu KL**. Deconstructing lipid kinase inhibitors by chemical proteomics. *Biochemistry* 57, 231-236 (2018).
36. Shin M, Snyder HW, Donvito G, Schurman LD, Fox TE, Lichtman AH, Kester M, and **Hsu KL**. Liposomal delivery of diacylglycerol lipase-beta inhibitors to macrophages dramatically enhances selectivity and efficacy in vivo. *Molecular Pharmaceutics* 15, 721-728 (2018).
35. Franks CE, Campbell ST, Purow BW, Harris TE, and **Hsu KL**. The Ligand Binding Landscape of Diacylglycerol Kinases. *Cell Chemical Biology* 24, 870-880 (2017).
34. Yun B, Lee H, Powell R, Reisdorph N, Ewing H, Gelb MH, **Hsu KL**, Cravatt BF, and Leslie CC. Regulation of calcium release from the endoplasmic reticulum by the serine hydrolase ABHD2. *Biochemical and Biophysical Research Communications* 490, 1226-1231 (2017).
33. Kohnz RA, Mulvihill MM, Chang JW, **Hsu KL**, Sorrentino A, Cravatt BF, Bandyopadhyay S, Goga A, and Nomura DK. Activity-Based Protein Profiling of Oncogene-Driven Changes in Metabolism Reveals Broad Dysregulation of PAFAH1B2 and 1B3 in Cancer. *ACS Chemical Biology* 10, 1624-1630 (2015).

Publications prior to independent position

32. Wilkerson JL, Ghosh S, Bagdas D, Mason BL, Crowe MS, **Hsu KL**, Wise LE, Kinsey SG, Damaj MI, Cravatt BF, and Lichtman AH. Diacylglycerol lipase beta inhibition reverses nociceptive behavior in mouse models of inflammatory and neuropathic pain. *British Journal of Pharmacology* 173, 1678-1692 (2016).
31. *Buczynski MW, *Herman MA, ***Hsu KL**, Natividad LA, Irimia C, Polis IY, Pugh H, Chang JW, Niphakis MJ, Cravatt BF, Roberto M, Parsons LH. Diacylglycerol lipase disinhibits VTA DA neurons during chronic nicotine exposure. *Proceedings of the National Academy of Sciences* 113, 1086-1091 (2016).
30. Baggelaar MP, Chameau PJ, Kantae V, Hummel J, **Hsu KL**, Janssen F, van der Wel T, Soethoudt M, Deng H, den Dulk H, Allarà M, Florea BI, Di Marzo V, Wadman WJ, Kruse CG, Overkleeft HS, Hankemeier T, Werkman TR, Cravatt BF, and van der Stelt M. Highly selective, reversible inhibitor identified by comparative chemoproteomics modulates diacylglycerol lipase activity in neurons. *Journal of the American Chemical Society* 137, 8851-8857 (2015).
29. Chang JW, Zuhl AM, Speers AE, Niessen S, Brown SJ, Mulvihill MM, Fan YC, Spicer TP, Southern M, Scampavia L, Fernandez-Vega V, Dix MM, Cameron MD, Hodder PS, Rosen H, Nomura DK, Kwon O, [§]**Hsu KL**, and [§]Cravatt BF. Selective inhibitor of platelet-activating factor acetylhydrolases 1b2 and 1b3 that impairs cancer cell survival. *ACS Chemical Biology* 10, 925-932 (2015). **PMCID: PMC4402257**
28. Manna JD, Wepy JA, **Hsu KL**, Chang JW, Cravatt BF, and Marnett LJ. Identification of the major prostaglandin glycerol ester hydrolase in human cancer cells. *Journal of Biological Chemistry* 289, 33741-33753 (2014). **PMCID: PMC4256310**
27. *Inloes J, ***Hsu KL**, Dix MM, Viader A, Masuda K, Takei T, Wood MR, and Cravatt BF. The hereditary spastic paraplegia-related enzyme DDHD2 is a principal brain triglyceride lipase. *Proceedings of the National Academy of Sciences* 111, 14924-14929 (2014). **PMCID: PMC4205627**
26. Grim, TW, Ghosh S, **Hsu KL**, Cravatt BF, Kinsey SG, and Lichtman AH. Combined inhibition of FAAH and COX produces enhanced anti-allodynic effects in murine neuropathic and inflammatory pain models. *Pharmacology, Biochemistry and Behavior* 124, 405-411 (2014). **PMCID: PMC4206939**
25. Naydenov AV, Horne EA, Cheah CS, Swinney K, **Hsu KL**, Cao JK, Marrs W, Blankman JL, Tu S, Cherry AE, Fung S, Wen A, Li W, Saporito MS, Selley DE, Cravatt BF, Oakley JC, and Stella N. ABHD6 blockade exerts antiepileptic activity independently of cannabinoid receptors. *Neuron* 83, 361-371 (2014). **PMCID: PMC4136499**
24. Agrawal P, Kurcon T, Pilobello, KT, Rakus JF, Koppolu S, Liu Z, Batista BS, Eng WS, **Hsu KL**, Liang Y, and Mahal LK. Mapping posttranscriptional regulation of the human glycome uncovers microRNA defining the glycode. *Proceedings of the National Academy of Sciences* 111, 4338-4343 (2014). **PMCID: PMC3964104**
23. Yun B, Lee H, Ghosh M, Cravatt BF, **Hsu KL**, Bonventre JV, Ewing H, Gelb MH, and Leslie CC. Serine hydrolase inhibitors block necrotic cell death by preventing calcium overload of the mitochondria and permeability transition pore formation. *Journal of Biological Chemistry* 289, 1491-1504 (2014). **PMCID: PMC3894331**
22. Dominguez E, Galmozzi A, Chang JW, **Hsu KL**, Pawlak J, Li W, Godio C, Thomas J, Partida D, Niessen S, O'Brien PE, Russell AP, Watt MJ, Nomura DK, Cravatt BF, and Saez E. Integrated phenotypic and activity-based profiling links Ces3 to obesity and diabetes. *Nature Chemical Biology* 10, 113-121 (2014). **PMCID: PMC3953460**
21. [§]**Hsu KL**, Tsuboi K, Chang JW, Whitby LR, Speers AE, Pugh H, and [§]Cravatt BF. Discovery and optimization of piperidyl-1,2,3-triazole ureas as potent, selective, and *in vivo*-active inhibitors of alpha/beta-hydrolase domain containing 6 (ABHD6). *Journal of Medicinal Chemistry* 56, 8270-8279 (2013). **PMCID: PMC3987869**
20. [§]**Hsu KL**, Tsuboi K, Whitby LR, Speers AE, Pugh H, Inloes J, and [§]Cravatt BF. Development and optimization of piperidyl-1,2,3-triazole ureas as selective chemical probes of endocannabinoid biosynthesis. *Journal of Medicinal Chemistry* 56, 8257-8269 (2013). **PMCID: PMC3984011**
19. Nagano KM, **Hsu KL**, Whitby LR, Niphakis MJ, Speers AE, Brown SJ, Spicer T, Fernandez-Vega V, Ferguson J, Hodder P, Srinivasan P, Gonzalez TD, Rosen H, Bahnson BJ, and Cravatt BF. Selective inhibitors and tailored activity probes for lipoprotein-associated phospholipase A(2). *Bioorganic & Medicinal Chemistry Letters* 23, 839-843 (2013). **PMCID: PMC3549684**

18. **Hsu KL**, Tsuboi K, Adibekian A, Pugh H, Masuda K, and Cravatt BF. DAGL β inhibition perturbs a lipid network involved in macrophage inflammatory responses. *Nature Chemical Biology* 8, 999-1007 (2012). **PMCID: PMC3513945**
17. Adibekian A, Martin BR, Chang JW, **Hsu KL**, Tsuboi K, Bachovchin DA, Speers AE, Brown SJ, Spicer T, Fernandez-Vega V, Ferguson J, Hodder PS, Rosen H, and Cravatt BF. Confirming target engagement for reversible inhibitors *in vivo* by kinetically tuned activity-based probes. *Journal of the American Chemical Society* 134, 10345-10348 (2012). **PMCID: PMC3392194**
16. Zuhl AM, Mohr JT, Bachovchin DA, Niessen S, **Hsu KL**, Berlin JM, Dochnahl M, Lopez-Alberca MP, Fu GC, and Cravatt BF. Competitive activity-based protein profiling identifies aza- β -lactams as a versatile chemotype for serine hydrolase inhibition. *Journal of the American Chemical Society* 134, 5068-5071 (2012). **PMCID: PMC3326416**
15. Adibekian A, Martin BR, Wang C, **Hsu KL**, Bachovchin DA, Niessen S, Hoover H, and Cravatt BF. Click-generated triazole ureas as ultrapotent *in vivo*-active serine hydrolase inhibitors. *Nature Chemical Biology* 7, 469-478 (2011). **PMCID: PMC3118922**
14. Propheter DC, **Hsu KL**, and Mahal LK. Recombinant lectin microarrays for glycomic analysis. *Methods in Molecular Biology* 723, 67-77 (2011).
13. **Hsu KL**, Pilobello K, Krishnamoorthy L, and Mahal LK. Ratiometric lectin microarray analysis of the mammalian cell surface glycome. *Methods in Molecular Biology* 671, 117-131 (2011).
12. *Propheter DC, ***Hsu KL**, and Mahal LK. Fabrication of an oriented lectin microarray. *ChemBioChem* 11, 1203-1207 (2010).
11. **Hsu KL** and Mahal LK. Sweet tasting chips: microarray-based analysis of glycans. *Current Opinions in Chemical Biology* 13, 427-432 (2009).
10. **Hsu KL**, Gildersleeve JC, and Mahal LK. A simple strategy for the creation of a recombinant lectin microarray. *Molecular BioSystems* 4, 654-662 (2008).
9. **Hsu KL** and Mahal LK. A lectin microarray approach for the rapid analysis of bacterial glycans. *Nature Protocols* 1, 543-549 (2006).
8. **Hsu KL**, Pilobello KT, and Mahal LK. Analyzing the dynamic bacterial glycome with a lectin microarray approach. *Nature Chemical Biology* 2, 153-157 (2006).

Books & Chapters

7. Adibekian A, Martin BR, Chang JW, **Hsu KL**, Tsuboi K, Bachovchin DA, Speers AE, Brown SJ, Spicer T, Fernandez-Vega V, Ferguson J, Cravatt BF, Hodder P, Rosen H. Characterization of a Selective, Reversible Inhibitor of Lysophospholipase 2 (LYPLA2). 2013 Apr 08 [updated 2014 Jan 13]. Probe Reports from the NIH Molecular Libraries Program. PMID: 24624468.
6. Adibekian A, Martin BR, Chang JW, **Hsu KL**, Tsuboi K, Bachovchin DA, Speers AE, Brown SJ, Spicer T, Fernandez-Vega V, Ferguson J, Cravatt BF, Hodder P, Rosen H. Characterization of a Selective, Reversible Inhibitor of Lysophospholipase 1 (LYPLA1). 2013 Apr 08 [updated 2014 Jan 13]. Probe Reports from the NIH Molecular Libraries Program. PMID: 24624465.
5. **Hsu KL**, Tsuboi K, Speers AE, Brown SJ, Spicer T, Fernandez-Vega V, Ferguson J, Cravatt BF, Hodder P, Rosen H. Optimization and characterization of triazole urea inhibitors for abhydrolase domain containing protein 6 (ABHD6). 2012 Apr 12 [updated 2013 Mar 14]. Probe Reports from the NIH Molecular Libraries Program. PMID: 23762934.
4. Adibekian A, **Hsu KL**, Speers AE, Monillas ES, Brown SJ, Spicer T, Fernandez-Vega V, Ferguson J, Bahnson BJ, Cravatt BF, Hodder P, Rosen H. Optimization and characterization of a triazole urea inhibitor for platelet-activating factor acetylhydrolase type 2 (PAFAH2). 2011 Mar 31 [updated 2013 Mar 07]. Probe Reports from the NIH Molecular Libraries Program. PMID: 23658960.
3. Adibekian A, **Hsu KL**, Speers AE, Brown SJ, Spicer T, Fernandez-Vega V, Ferguson J, Cravatt BF, Hodder P, Rosen H. Optimization and characterization of a triazole urea inhibitor for alpha/beta hydrolase domain-containing protein 11 (ABHD11): anti-probe for LYPLA1/LYPLA2 dual inhibitor ML211. 2011 Mar 31 [updated 2013 Mar 07]. Probe Reports from the NIH Molecular Libraries Program. PMID: 23658953.

2. Nagano JMG, **Hsu KL**, Speers AE, Brown SJ, Spicer T, Fernandez-Vega V, Ferguson J, Bahnson BJ, Cravatt BF, Hodder P, Rosen H. Optimization and characterization of a carbamate inhibitor for plasma platelet-activating factor acetylhydrolase (pPAFAH). 2011 Nov 30 [updated 2014 May 13]. Probe Reports from the NIH Molecular Libraries Program. PMID: 23658952.
1. **Hsu KL**, Tsuboi K, Speers AE, Brown SJ, Spicer T, Fernandez-Vega V, Ferguson J, Cravatt BF, Hodder P, Rosen H. Optimization and characterization of a triazole urea inhibitor for diacylglycerol lipase beta (DAGL- β). 2012 Apr 16 [updated 2013 Feb 25]. Probe Reports from the NIH Molecular Libraries Program. PMID: 23658950.

CURRENT FUNDING

R01 DA043571 (Hsu, PI)
\$1,952,939 (total)
NIH/NIDA
9/15/2017 – 6/30/2023 (in NCE)
Endocannabinoid Biosynthesis in Inflammation and Pain

The specific aims of this application are to identify new anti-inflammatory mechanisms and drug delivery strategies for developing targeted anti-inflammatory drugs suitable for combating chronic disease.

CAREER CHE-1942467 (Hsu, PI)
\$681,000 (total)
National Science Foundation
04/1/2020 – 03/31/2025
CAREER: Next-Gen Flow Cytometry – A New Approach to Cell Heterogeneity

The overall goal of the proposed studies is to study lipid metabolism and signaling at the single cell level.

Emerging Leader Award (Hsu, PI)
\$750,000 (total)
The Mark Foundation for Cancer Research
2/1/2021 – 1/31/2024
Targeting Oncogenic Proteoforms Using Tyrosine-Reactive Chemistry

We propose a chemical technology that can selectively enrich, quantify and pharmacologically target different molecular forms of oncogenic proteins.

R01 GM144472 (Hsu, PI)
\$1,328,779 (total)
NIH/NIGMS
1/01/2022 – 11/30/2025
Defining and targeting substrate specificity of protein tyrosine phosphatases

The long-term goal of this research program is development of a proteomics methodology that captures protein tyrosine phosphatase (PTP) activity and specificity on native proteins in the human proteome.

Owens Innovation Fund (Hsu, PI)
\$300,000 (total)
Owens Family Foundation
7/1/2021 – 6/30/2024
Covalent Ligands for BIC and FIC molecules

This research program will develop first-in-class (FIC) and best-in-class (BIC) compounds against undruggable targets using enabling proteomics technology.

R01 AI169412 (Hsu, PI)

\$1,956,260 (total)

NIH/NIAID

1/13/2023 – 12/31/2027

Chemical proteomic investigation of lipid kinase specificity and druggability

The proposed research program will test whether selective blockade of DGK-alpha can restore deficient DAG signaling to overcome immunosuppression of tumor infiltrating lymphocyte activity.

R01 GM136900 (Harris, PI; Hsu, Collaborator)

\$1,724,061 (total project); \$57,927 (to Hsu);

NIH/NIGMS

3/10/2020 – 12/31/2023

Regulation of lipid phosphatidic acid phosphatase activity

This proposal investigates lipid synthesis by determining how the phosphatidic acid phosphatase lipin is regulated.

R03 AG070428 (Ferris, PI; Hsu, Co-I)

\$323,000 (total project); \$17,646 (to Hsu)

NIH/NIA

2/1/2021 – 1/31/2023

The brain cholesterol interactome

This project will use a cholesterol probe to track how cholesterol leaves cells in the brain, called astrocytes, and enters neurons.

COMPLETED FUNDING

Young Investigator Award (Hsu, PI)

\$225,000 (total)

Melanoma Research Alliance

6/1/2018 – 5/31/2022 (in NCE)

Manipulating Cellular Metabolism to Promote Cancer Immunity in Melanoma

The overall goal of the proposed studies is to establish a new paradigm for enhancing T cell activity against melanoma by using enzyme inhibitors that target metabolic pathways induced in the tumor microenvironment.

CA160480 (Hsu, PI)

\$568,800 (total)

USAMRAA, Department of Defense

8/1/2017 – 7/31/2020

Diacylglycerol Activation of T-Cell Receptor Signaling for Cancer Immunotherapy

The specific aims of this application are to test novel diacylglycerol kinase inhibitors for immunotherapy applications in melanoma.

R00 DA035864-04 (Hsu, PI)

\$722,286 (total)

NIH/NIDA

7/1/2015 – 6/30/2019

Functional Characterization of Diacylglycerol Lipases in Mammalian Physiology

The specific aims of this application are to integrate genetic mouse models with novel chemical probes to functionally uncouple the central and peripheral functions of the endocannabinoid system in obesity-associated metabolic disorders.

Physical Sciences-Oncology Research Innovation (Bullock, PI; Hsu, Co-PI)

\$32,500 (total)

University of Virginia Cancer Center

10/1/2018 – 9/30/2019

Analysis and development of enolase 1 reporters as a biomarker of tumor infiltrating lymphocyte function

The specific aims are to develop chemical reporters for isolation of enolase-active T cell populations to test in immunotherapy applications.

University of Virginia Cancer Center (Purow, PI; Hsu, Co-PI)

\$200,000 (total)

University of Virginia Cancer Center

5/1/2018 – 4/30/2020

Targeting diacylglycerol kinases-alpha and -beta for the treatment of melanoma

The goal of this cancer center collaboration is to develop novel DGK inhibitors for killing melanoma cells.

Brain Tumor Research (Purow, PI; Hsu, Co-I)

\$100,000 (total)

Schiff Foundation

9/1/2017 – 6/30/2019

Discovery of potent and selective diacylglycerol kinase-alpha inhibitors as clinical anti-glioblastoma candidates

The specific aims of this application are to explore the clinical applications diacylglycerol kinase-alpha inhibitors for treatment of GBM.

LaunchPad for Diabetes Program (Hsu, PI)

\$26,000 (total)

Manning Family Foundation at UVA

6/1/2016 – 5/31/2017

Modulating Diacylglycerol Kinase Activity to Enhance Insulin Secretion in Type 2 Diabetes

We will test our hypothesis that small molecules designed to activate DGK α and DGK γ represents a novel therapeutic strategy to control impaired insulin secretion in type 2 diabetes.

INVITED LECTURES

*International seminars/meetings

73. *Protein and Lipid Discovery on a Global Scale*. Department of Physiology, University of Texas Southwestern Medical Center, Dallas, TX (2023).
72. *Chemical Strategies for Profiling RNA-Protein Interactions*. Small Molecules Targeting RNA Session, Discovery on Target, Boston, MA (2023).

71. *SuTEx Chemistry: Applications for Chemical Biology and Protein Ligand Discovery*. School of Molecular Sciences, Arizona State University, Tempe, AZ (2023).
70. *Deciphering Specificity of Diacylglycerol Metabolic Enzymes by Chemoproteomics and Protein Engineering*. Gordon Research Conference: Molecular and Cellular Biology of Lipids, Waterville Valley, NH (2023).
69. **Endocannabinoid Biosynthetic Enzymes: Targets for Modulating Inflammation and Pain*. Gordon Research Conference: Cannabinoid Function in the CNS, Castelldefels, B, Spain (2023).
68. *SuTEx Chemistry: Applications for Chemical Biology and Protein Ligand Discovery*. Gordon Research Conference: Bioorganic Chemistry, Andover, NH (2023).
67. *Chemical Methods for Investigating the RNA Interactome*. RNA-Targeting Small Molecule Drugs Session, Drug Discovery Chemistry, San Diego, CA (2023).
66. *SuTEx Chemistry: Applications for Chemical Biology and Protein Ligand Discovery*. Department of Integrative Biology and Pharmacology, University of Texas Health Science Center at Houston, Houston, TX (2023).
65. *Discovery of Stress-Responsive Tyrosine and Lysine Sites Mediating Biomolecular Condensate Formation*. Crossroads of Chemistry, ACS Spring National Meeting, Indianapolis, IN (2023).
64. *SuTEx Chemistry: Applications for Chemical Biology and Protein Ligand Discovery*. Department of Chemistry, Purdue University, West Lafayette, IN (2023).
63. *Engineering Covalency into Academic and Therapeutic Discovery*. Institute for Applied Cancer Science, Department of Genomic Medicine, MD Anderson Cancer Center, Houston, TX (2023).
62. *Protein and Lipid Discovery on a Global Scale*. Gordon Research Conference: Phosphorylation and G-Protein Mediated Signaling Networks, Southbridge, MA (2022).
61. *Discovery of First-in-class Covalent Chemistry and Ligands*. FASEB Conference on The Cell Signaling in Cancer: From Mechanisms to Therapy, New Orleans, LA (2022).
60. *Assessing Tractability of Tyrosines for Covalent Probe and Therapeutic Discovery*. Chemoproteomics & Chemical Biology Conference, Drug Discovery Chemistry, San Diego, CA (2022).
59. *Developing Targeted Covalent Inhibitors of Lipid Enzymes through Discovery of Cryptic Binding Sites*. Bonding Through Chemistry, ACS Spring National Meeting, San Diego, CA (2022).
58. **Protein and Lipid Discovery on a Global Scale*. CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences, Vienna, Austria (2022).
57. *Functional Reporters of T cell Metabolism for Immunotherapy Applications*. Melanoma Research Alliance Scientific Retreat, Washington, DC (2022).
56. *Sulfur-Triazole Exchange Chemistry: Applications for Chemical Biology and Protein Ligand Discovery*. Bioorthogonal Chemistry: Tools and Applications in Chemical Biology, Pacificchem, Honolulu, HI (2021).
55. *Protein and Lipid Discovery using Chemical Proteomic Technologies*. The School of Mathematical and Physical Sciences, University of New England, Biddeford, ME (2021).
54. *Protein and Lipid Discovery on a Global Scale*. Department of Chemistry, University of Texas at Austin, Austin, TX (2021).
53. *Protein and Lipid Discovery using Chemical Proteomic Technologies*. Department of Chemistry, Princeton University, Princeton, NJ (2021).
52. *Protein and Lipid Discovery using Chemical Proteomic Technologies*. Chemistry & Biochemistry Department, Taylor University, Upland, IN (2021).
51. *Protein and Lipid Discovery using Chemical Proteomic Technologies*. Department of Chemistry, University of Texas at Austin, Austin, TX (2021).
50. *Invited Session Chair*. Melanoma Research Alliance Scientific Retreat, Washington, DC (2021).
49. *Sulfur-Triazole Exchange Chemistry: Applications for Chemical Proteomics and Protein Ligand Discovery*. Department of Chemistry, Virginia Commonwealth University, Richmond, VA (2021).
48. *Sulfur-Triazole Exchange Chemistry: Applications for Chemical Proteomics and Protein Ligand Discovery*. Department of Pharmaceutical Sciences, University of California Irvine, Irvine, CA (2020).
47. *Chemical Biology and Chemistry for Translational Lipid Biology and Beyond*. Department of Chemistry, Virginia Tech, Blacksburg, VA (2019).

46. *Chemical Biology and Chemistry for Translational Lipid Biology and Beyond*. Department of Chemistry and Department of Molecular and Structural Biochemistry, NC State, Raleigh, NC (2019).
45. *Chemical Biology and Chemistry for Translational Lipid Biology*. Department of Chemistry and Biochemistry, University of North Carolina Wilmington, Wilmington, NC (2019).
44. *Chemical Biology and Chemistry for Translational Lipid Biology and Beyond*. Department of Chemistry, University of Virginia, Charlottesville, VA (2019).
43. *Tunable Chemistry for Global Discovery of Protein Function and Ligands*. Southeast Regional Meeting of the American Chemical Society (SERMACS), Savannah, GA (2019).
42. *Targeting Endocannabinoid Biosynthetic Pathways for Inflammation and Pain*. Chemistry and Pharmacology of Drug Abuse Conference, Boston, MA (2019).
41. *Tunable Chemistry for Global Discovery of Protein Function and Ligands*. Gordon Research Conference: Enzymes, Coenzymes and Metabolic Pathways, Waterville Valley, NH (2019).
40. *Mapping Diacylglycerol Pathways for Immunomodulation*. Department of Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School, Worcester, MA (2019).
39. *Mapping Diacylglycerol Pathways for Immunomodulation*. Chemistry Department, Boston College, Chestnut Hill, MA (2019).
38. *Mapping Diacylglycerol Pathways for Immunomodulation*. Department of Chemistry, The Scripps Research Institute, La Jolla, CA (2019).
37. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Eshelman School of Pharmacy, University of North Carolina, Chapel Hill, NC (2019).
36. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Department of Chemistry, Duke, Durham, NC (2019).
35. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Department of Chemistry, New York University, New York, NY (2019).
34. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Chemical Biology Program, Memorial Sloan Kettering Cancer Center, New York NY (2019).
33. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Center for Cancer Research, National Cancer Institute, Bethesda, MD (2019).
32. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Department of Chemistry, The Scripps Research Institute, Jupiter, FL (2019).
31. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Vanderbilt Institute of Chemical Biology, Nashville, TN (2019).
30. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Department of Chemistry, Temple University, Philadelphia, PA (2019).
29. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Pharmacology and Chemical Biology Seminar Series, Baylor College of Medicine, Houston, TX (2019).
28. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Chemical Biology & Therapeutics Department, St. Jude Children's Research Hospital, Memphis, TN (2019).
27. *Exploring Ligand Binding Space to Discover New Lipid Biology*. College of Chemistry, University of California Berkeley, Berkeley, CA (2019).
26. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Molecular Physiology and Biological Physics Seminar Series, University of Virginia, Charlottesville, VA (2018).
25. *Exploring Ligand Binding Space to Discover New Lipid Biology*. Thermo Fisher Scientific / METRIC symposium, North Carolina State University, Raleigh, NC (2018).
24. *Using mass spectrometry to exploit a single isoleucine/leucine difference in ERK substrate binding sites for activity-based profiling of MAPK signaling*. Advances in Mass Spectrometry session, 256th American Chemical Society National Meeting, Boston, MA (2018).
23. *Chemical proteomic discovery of new agents that induce apoptotic cell death of lung tumor cells*. Early Career Investigators in Biological Chemistry session, 256th American Chemical Society National Meeting, Boston, MA (2018).

22. *Chemoproteomic discovery of ligand binding hotspots in the lipid kinome*. Molecular Basis of Signaling Spotlight Session, American Society for Biochemistry and Molecular Biology Annual Meeting, San Diego, CA (2018).
21. *Chemoproteomic Strategies to Decode Metabolic Regulation of Lipid Signaling*. Department of Pharmacology and Toxicology, Virginia Commonwealth University, Richmond, VA (2018).
20. *Chemoproteomic discovery of lipid kinase inhibitors for immuno-oncology*. Early Career Investigators in Biological Chemistry session, 255th American Chemical Society National Meeting, New Orleans, LA (2018).
19. *Chemoproteomic Strategies to Decode Metabolic Regulation of Lipid Signaling*. Department of Biochemistry, Virginia Tech, Blacksburg, VA (2018).
18. *Using Mass Spectrometry to Understand and Target Diacylglycerol Metabolism and Signaling*. Thermo Scientific Mass Spec Users' Meeting, Bethesda, MD (2017).
17. *Targeting the lipid kinome for cancer immunotherapy*. Southeast Regional Meeting of the American Chemical Society (SERMACS), Charlotte, NC (2017).
16. *Fighting melanoma through the body's immune system*. Heritage University in partnership with the Leadership Alliance, Toppenish, WA (2017).
15. *Liposomal DAGLB inhibitors - towards targeted NSAIDs for treatment of chronic inflammation*. Virginia Nanomedicine Symposium, University of Virginia, Charlottesville, VA (2017).
14. *Chemical Proteomic Profiling of Diacylglycerol Kinases*. Southeastern Chemical Biology Symposium, University of Georgia, Athens, GA, (2017).
13. *Perturbing Lipid Metabolism to Probe Cellular Signaling*. Genome Sciences Seminar Series, University of Virginia, Charlottesville, VA (2016).
12. **Chemical Strategies to Probe the Immune Response*. RIKEN Integrative Medical Sciences Summer Program, RIKEN Yokohama Campus, Japan (2016).
11. *Diacylglycerol Metabolism in Regulation of Innate and Adaptive Function of Dendritic Cells*. 64th American Society for Mass Spectrometry Conference, San Antonio, TX (2016).
10. *Lipid Metabolism in Inflammation and Immunity*. Biochemistry and Molecular Genetics Department Seminar Series, University of Virginia, Charlottesville, VA (2015).
9. *Lipid Metabolism in Immune Cell Function*. Department of Nutritional Sciences & Toxicology, University of California Berkeley, Berkeley, CA (2015).
8. *Chemical Approaches for Basic and Translational Discoveries in Immunology*. University of Virginia Cancer Center Seminar Series, UVA, Charlottesville, VA (2015).
7. *Lipid Metabolism in the Mammalian Immune Response*. Chemical Biology Institute, Yale University, New Haven, CT (2014).
6. *Lipid Metabolism in the Mammalian Immune Response*. Department of Biochemistry, University of Utah, Salt Lake City, UT (2014).
5. *Lipid Metabolism in the Mammalian Immune Response*. Department of Chemistry, Columbia University, New York, NY (2014).
4. *Lipid Metabolism in the Mammalian Immune Response*. Vanderbilt Institute of Chemical Biology, Nashville, TN (2013).
3. *Lipid Metabolism in the Mammalian Immune Response*. Pharmacology and Chemical Biology Seminar Series, Baylor College of Medicine, Houston, TX (2013).
2. *Lipid Metabolism in the Mammalian Immune Response*. School of Biological Sciences, Georgia Institute of Technology, Atlanta, GA (2013).
1. *Lipid Metabolism in the Mammalian Immune Response*. Department of Chemistry, University of Virginia, Charlottesville, VA (2013).

CONTRIBUTED CONFERENCE ABSTRACTS

(The presenting author is listed first; Work performed in my laboratory at UVA.

UVA graduate students and postdoctoral fellows are underlined; UVA undergraduate students are highlighted by underline and # symbol)

31. Borne AL, Brulet JW, Hahm HS, Toroitich EK, Libby AH, Yuan K, and Hsu KL. *Exploring ligandability of tyrosines in proteomes using sulfur-triazole exchange chemistry*. American Chemical Society Fall Virtual Meeting & Exposition (2020)
30. Brulet JW, Gemta LF, Gonzales MA, Bullock TNJ, and Hsu KL. *Enolase-1 activity-based probes as a metabolic biomarker of tumor infiltrating lymphocyte function for immunotherapy applications*. 2020 Melanoma Research Alliance Scientific Retreat, Washington, DC (2020)
29. Borne AL, Brulet JW, Hahm HS, Toroitich EK, Libby AH, Yuan K, and Hsu KL. *Interrogating tyrosine phosphatase specificity by quantitative chemoproteomics*. Gordon Research Conference – High Throughput Chemistry & Chemical Biology, New London, NH (2019).
28. Ware TB, Franks CE, Granade M, Harris TE, and Hsu KL. *Diacylglycerol kinase fatty acyl specificity is encoded by C1 domains*. Gordon Research Conference – High Throughput Chemistry & Chemical Biology, New London, NH (2019).
27. Brulet JW, Borne AL, and Hsu KL. *C1-Tailored activity based probes function as membrane sensors of protein activation*. Gordon Research Conference – High Throughput Chemistry & Chemical Biology, New London, NH (2019).
26. Franks CE, and Hsu KL. *Identification of a Key Mediator of Anticancer Activity in Lung Tumor Cells*. Department of Chemistry Scientific Retreat, Barboursville, Virginia (2018).
25. Shin M, and Hsu KL. *Discovery of differential involvement of DAGLB in inflammatory pains using ABPP and liposomal inhibitor delivery*. Department of Chemistry Scientific Retreat, Barboursville, Virginia (2018).
24. Shin, M, Snyder HW, Donvito G, Schurman LD, Fox TE, Lichtman AH, Kester M, and Hsu KL. *Liposomal delivery of diacylglycerol lipase-beta inhibitors to macrophages dramatically enhances selectivity and efficacy in vivo*. Gordon Research Conference – Bioorganic Chemistry, Andover, NH (2018).
23. Franks CE, McCloud RL, Campbell ST, Purow BW, Harris TE, and Hsu KL. *Quantitative chemical proteomics to evaluate lipid kinase inhibitor binding profiles*. Gordon Research Conference – Bioorganic Chemistry, Andover, NH (2018).
22. Franks CE, McCloud RL, Campbell ST, Purow BW, Harris TE, and Hsu KL. *Quantitative chemical proteomics to evaluate lipid kinase inhibitor binding profiles*. 26th Annual Graduate Biosciences Society Symposium, Charlottesville, VA (2018).
21. Shin, M, Snyder, HW, Donvito, G, Schurman, LD, Fox, TE, Lichtman, AH, Kester, M, and Hsu, KL. *Liposomal delivery of diacylglycerol lipase-beta inhibitors to macrophages dramatically enhances selectivity and efficacy in vivo*. 255th American Chemical Society National Meeting & Exposition, New Orleans, LA (2018).
20. Franks CE, Campbell ST, Purow BW, Harris TE, and Hsu KL. *Development of a chemical proteomic strategy to target diacylglycerol kinases*. 255th ACS National Meeting, New Orleans, LA (2018).
19. Blair H[#] and Hsu KL. *Utilization of a kinase assay to screen a fragment-based inhibitor library against the human kinome*. The Virginia Section of the American Chemical Society, Charlottesville, VA (2018).
18. Diaz J[#], Campbell ST, Lee E[#], and Hsu KL. *The Purification of the rDGK α Protein*. Leadership Alliance First Annual Biomedical Research Symposium for Minority Students, Indianapolis, IN (2018).
17. Diaz J[#], Campbell ST, Lee E[#], and Hsu KL. *The Purification of the rDGK α Protein*. Leadership Alliance First Leadership Alliance National Symposium, Hartford, CT (2018).
16. Diaz J[#], Campbell ST, Lee E[#], and Hsu KL. *The Purification of the rDGK α Protein*. Leadership Alliance First Year Research Experience (FYRE) Symposium, Charlottesville, VA (2018).
15. Franks CE, Campbell ST, Purow BW, Harris TE, and Hsu KL. *Development of a chemical proteomic strategy to target diacylglycerol kinases*. Annual Department of Pharmacology Research Retreat, Charlottesville, VA (2017).
14. Shin M, and Hsu KL. *Role of DAGLB in regulation of inflammatory signaling of bone marrow derived macrophages*. VirginiaCancerRx Symposium, Charlottesville, VA (2017).
13. Franks CE, Campbell ST, Purow BW, Harris TE, and Hsu KL. *A Chemical Proteomic Strategy for Targeting Diacylglycerol Kinases*. VirginiaCancerRx Symposium, Charlottesville, VA (2017).

12. Franks CE, Campbell ST, Purow BW, Harris TE, and Hsu KL. *A Chemical Proteomic Strategy for Targeting Diacylglycerol Kinases.* 25th Annual Graduate Biosciences Society Symposium, Charlottesville, VA (2017).
11. Idris B[#], Yoo M[#], Shin J[#], Shin M, and Hsu KL. *Developing Reversible Inhibitors for Diacylglycerol Lipase Beta.* Annual Biomedical Research Symposium for Minority Students, Phoenix, AZ (2017).
10. Idris B[#], Yoo M[#], Shin J[#], Shin M, and Hsu KL. *Developing Reversible Inhibitors for Diacylglycerol Lipase Beta.* Leadership Alliance National Symposium, Hartford, CT (2017).
9. Barba M[#], Yoo M[#], Shin J[#], and Hsu KL. *Screening for Novel Diacylglycerol Lipase-Beta Inhibitors.* Leadership Annual Biomedical Research Symposium for Minority Students, Phoenix, AZ (2017).
8. Barba M[#], Yoo M[#], Shin J[#], and Hsu KL. *Screening for Novel Diacylglycerol Lipase-Beta Inhibitors.* Leadership Alliance National Symposium, Hartford, CT (2017).
7. Barba M[#], Yoo M[#], Shin J[#], and Hsu KL. *Screening for Novel Diacylglycerol Lipase-Beta Inhibitors.* Leadership Alliance First Year Research Experience (FYRE) Symposium, Charlottesville, VA (2017).
6. Ha Y[#] and Hsu KL. *Chemical Approaches for Site-Specific Modification of Proteins.* The Virginia Section of the American Chemical Society, Charlottesville, VA (2016).
5. Hernandez-Vega J[#], Franks CE, and Hsu KL. *Functional Characterization of Diacylglycerol Kinase Epsilon.* Annual Biomedical Research Symposium for Minority Students, Tampa, FL (2016).
4. Hernandez-Vega J[#], Franks CE, and Hsu KL. *Functional Characterization of Diacylglycerol Kinase Epsilon.* Leadership Alliance National Symposium, Stamford, CT (2016).
3. Honore S[#], Shin M, and Hsu KL. *Development of ABPP based platform for reversible compound identification.* Annual Biomedical Research Symposium for Minority Students, Tampa, FL (2016).
2. Honore S[#], Shin M, and Hsu KL. *Development of ABPP based platform for reversible compound identification.* Leadership Alliance National Symposium, Stamford, CT (2016).
1. Honore S[#], Shin M, and Hsu KL. *Development of ABPP based platform for reversible compound identification.* Leadership Alliance First Year Research Experience (FYRE) Symposium, Charlottesville, VA (2016).

PATENTS

1. Cravatt BF, Adibekian A, Tsuboi K, Hsu KL. (2015) N1- and N2-Carbamoyl-1,2,3-Triazole Serine Hydrolase Inhibitors and Methods. United States Patent 9,108,930, issued August 18, 2015.
2. Hsu KL, Franks CE, Hahm HS, Brulet JW, Huang T. (2018) Compositions and Uses Thereof. PCT/US2018/039615.
3. Hsu KL, McCloud RL. (2019) Compositions and Methods for Preparing and Using Azetidines. PCT/US2019/028340.
4. Hsu KL, Hahm HS, Toroitich EK, Brulet JW, Borne AL, Libby AH, Yuan K. Sulfur-Heterocycle Exchange Chemistry and Uses Thereof. PCT/US2020/024286.

TEACHING ACTIVITIES

Undergraduate Courses

Fall 2018, 2019, 2020, 2021 CHEM2410 Organic Chemistry I

- Lecture course focused on understanding the structure and reactivity of organic molecules. Basic concepts will be taught so students are proficient at predicting reactivity, product outcome, and how to design a synthesis.
- ~70 students in each offering of the course

Spring 2019, 2021 CHEM5560/5540 Introduction to Chemical Biology

- Advanced undergraduate chemical biology course. The goal of this course is to provide students a working knowledge of the nascent field of bio-organic/chemical biology, introduce the latest research, hone literature skills, and provide an opportunity to write a competitive proposal. Students are evaluated based on class participation, peer review, assigned drafts of NIH proposal, final NIH proposal document, and final research presentation.
- ~12 students in each offering of the course

Fall 2017 and Spring 2018 CHEM3951/3961/4951/4961 Introduction to Research and Supervised Original Research in Chemistry

- Research based course intended to provide a genuine research environment and experience for undergraduate students.
- ~100 students in each offering of the course

Graduate courses

Fall 2015, 2016, 2017 CHEM 7010 Research Seminar I: Introduction to Research

- Seminar style graduate course provides students with an introduction to the theory and practice of scientific research and professional development.
- ~40 students in each offering of the course

SUPERVISED RESEARCH

Graduate (Ph.D.) supervised research

Myungsun Shin	2015 – 2019
Caroline E. Franks	2015 – 2019
Jeffrey W. Brulet	2015 – 2020
Emmanuel Toroitich*	2016 – 2020
Rebecca McCloud (co-advised with Don Hunt)	2016 – 2020
Timothy Ware*	2016 – 2021
Adam Borne	2017 – 2021
Anthony Ciancone	2017 – 2022
Roberto Mendez*	2017 – 2022
Kun Yuan	2017 – 2022
Andrew Heindel	2018 – 2023
Miaomiao Chen	2019 – present
Michael Founds	2019 – present
Olivia Murtagh	2020 – present
Madeleine Ware	2021 – present
David Leace	2022 – present

Research Scientists supervised research

Heung Sik Hahm, M.S.	2015 – 2020
Mark M. Ross, Ph.D.	2015 – 2022
Tao Huang, Ph.D.	2018 – 2021

Adam H. Libby, Ph.D.	2019 – 2023
Dina Bai, Ph.D.	2021 – 2023
Anting Chen	2023 – present
Emily Ayers	2023 – present

Postdoctoral Fellows supervised research

Sean Campbell, Ph.D.	2016 – 2018
Boobalan Pachaiyappan, Ph.D.	2018 – 2019
Justin Grams, Ph.D.	2021 – present
Xiaoding Jiang, Ph.D.	2021 – present
Minhaj Shaikh	2021 – present
Zhihong Li, Ph.D.	2022 – present
Neelesh Reddy	2023 – present
Changlei Zhu	2023 – present

Undergraduate supervised research

Youlim Ha	2015 – 2017
Jack Hawkins	2015 – 2017
Carolyn Hill	2015 – 2017
Hailey Blair	2016 – 2018
Victoria Kim	2016 – 2017
Liuzhi Zhang	2016 – 2017
Samuel Honore*	2016 (FYRE)
Jocelyn Hernandez-Vega*	2016 (NC Alliance)
Michelle Barba*	2017 (FYRE)
Mary Yoo	2017
Jiyun Shin	2017
Bashir Idris*	2017 (NC Alliance)
Amrita Shankar	2017 – 2018
Sajan Sheth	2017 – 2018
Elizabeth Lee [#]	2017 – 2020
Amit Prakash	2018 – 2019
Jasmine Diaz*	2018 (FYRE)
Michele Liu	2018 – 2019
Kelly Isbell	2018 – 2021
Rachel Rumana	2018 – 2021
Skylar Brodowski	2019 – 2022
Rebecca Schelling	2019 – 2021
Sadeechya Gurung [#]	2019 – 2020
Robert Pei	2019 – 2021
Caitlin McSorley [#]	2022 – 2023
Robert Seal	2022 – 2023
James Veccia	2022 – 2023
Blake Hoffman	2022 – 2023

#Distinguished Majors Program Undergraduate Thesis

PROFESSIONAL SOCIETIES

2013-present	American Chemical Society
2014-present	International Cannabinoid Research Society
2015-present	American Association of Immunologists
2016-present	American Society for Mass Spectrometry
2017-present	American Association for Cancer Research
2017-present	American Society for Biochemistry and Molecular Biology
2021-present	The New York Academy of Sciences

PROFESSIONAL SERVICE

Department

2015 – present	Graduate Recruitment Committee
2015 – present	Department Seminar Committee
2018 – present	Lead organizer for Annual Chemistry Department Scientific Retreat
2018 – 2019	Faculty Search Committee (Chemical Biology)
2020 – present	Awards Committee Chair

University

2015 – present	Chemistry Faculty Marshal
2015 – present	Undergraduate Non-major Advisor (Arts and Sciences)
2016 – 2017	Judge for regional American Chemical Society Undergraduate Research Poster Session

Local Community Outreach

2016	Patients and Friends (local breast cancer fundraising organization) meeting – invited to present ongoing research in my group to breast cancer patient survivors.
------	---

National/International

2015	Reviewer for NSF sponsored Data Science Workshop
2015 – present	Reviewer for Journals: <i>Nature Chemical Biology</i> , <i>Nature Methods</i> , <i>Nature Communications</i> , <i>Journal of the American Chemistry Society</i> , <i>ACS Central Science</i> , <i>eLife</i> , <i>Chemical Science</i> , <i>Proceedings of National Academy of Sciences</i> , <i>Cell Chemical Biology</i> , <i>ACS Chemical Biology</i> , <i>Biochemistry</i> , <i>Chemical Reviews</i> , <i>Chemical Communications</i> , <i>Analytical Chemistry</i> , <i>Journal of Medicinal Chemistry</i> , <i>ACS Medicinal Chemistry Letters</i> , <i>Analytical Biochemistry</i> , <i>Bioorganic & Medicinal Chemistry Letters</i> , <i>ChemMedChem</i> , <i>European Journal of Medicinal Chemistry</i> , <i>Journal of Lipid Research</i> , <i>Scientific Reports</i> , <i>Analytica Chimica Acta</i> , and <i>The Journal of Membrane Biology</i> .
2016 – present	Mentor for the following programs to promote diversity in STEM education: The Leadership Alliance to build a First Year Research Experience (FYRE) program and Virginia-North Carolina Louis Stokes Alliance for Minority Participation program.
2018	Reviewer for The Mark Foundation for Cancer Research Aspire Award, Chordoma Foundation, Inova Translational Research Funding Program, and the National Science Center Poland.

2021 Reviewer on Chemistry of Life Processes (CLP) FY22 CAREER Award Panel
2021 Scientific Organizing Committee, The New York Academy of Sciences Virtual Meeting:
Covalent Modification: Chemical Biology and Therapeutic Applications
2021 Reviewer on the NIH Special Emphasis Panel/Scientific Review Group 2022/01 ZRG1
MDCN-F 05
2022 Reviewer for The Mark Foundation for Cancer Research Aspire Award
2023 Reviewer on the NIH Chemical Biology and Probes (CBP) Study Section. Reviewer for
The Mark Foundation for Cancer Research Emerging Leader Award

STUDENT HONORS AND CURRENT POSITIONS

Graduate Students

Caroline Franks, PhD – Senior Staff at the National Institutes of Health
Clinical Chemistry Postdoctoral Fellowship at Washington University St. Louis;
Advancement to Ph.D. Candidacy with High Pass; NIH Pharmacological Sciences Training Grant (2015 –
2017); 3rd year poster award (1st place in Chemistry department); Best Predoctoral Presentation (2017
Pharmacology department retreat); Cell Chemical Biology Paper Featured in Lipid Corner in August 2017
(ASBMB); Women Chemists Committee/Eli Lilly travel award to the 255th ACS National Meeting; Departmental
Travel Award (2017); 2018 Sidney M. Hecht Graduate Fellowship

Myungsun Shin, PhD – Postdoctoral Fellow at Dana-Farber Cancer Institute/Harvard Medical School
(Mancias and Gygi Labs)

Jeffrey Brulet, PhD – Scientist at Scorpion Therapeutics
NIH Pharmacological Sciences Training Grant (2016 – 2018); Internship at Pfizer Cambridge (2015 – 2016)

Emmanuel Toroitich, PhD – Senior Analyst at Health Advances
National Science Foundation BIO 2019 I-Corps Bio-Entrepreneurship Workshop (2019)

Rebecca McCloud, PhD – Senior Scientist at AbbVie
National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP) Fellowship (2018); Adam
Ritchie Outstanding Graduate Student (2019); Women Chemists Committee/Eli Lilly travel award to the 259th
ACS National Meeting; Departmental Travel Award (2019)

Timothy Ware, PhD – Postdoctoral Fellow at The Scripps Research Institute (Cravatt Lab)
F31 Ruth L. Kirschstein Predoctoral Individual National Research Service Award from NIH NIDA (2021), NIH
Diversity Supplement (2020); NIH Molecular Biophysics Training Grant (2017 – 2019); Advancement to Ph.D.
Candidacy with High Pass

Adam Borne, PhD – Computational Biologist at Roivant Sciences
NIH Cancer Research Training Grant (2017 – 2019); Wagner Fellowship Award (2018)

Roberto Mendez - 5th year graduate student
NIH Pharmacological Sciences Training Grant (2019 – 2021)

Andrew Heindel – 5th year graduate student

NIH Biotechnology Training Program (2018 – 2020)

Undergraduate Students

Youlim Ha – graduate student at Johns Hopkins Medicine

Chemistry Departmental Award for Excellence (2016); Ozgur Ekmekci Award for Excellence in Chemistry from AMPEL BioSolutions (2016)

Carolyn Hill – PharmD student at VCU

Chemistry Departmental Award for Excellence (2016)

Jack Hawkins – Medical student at the Uniformed Services University of Health Sciences

Liuzhi Zhang – Medical student at VCU

Alpha Chi Sigma Chemistry Award (2017)

Kelly Isbell

Minerva Scholars Award (2019)

Oscar R. Rodig Alpha Chi Sigma Chemistry Award (2021)

Skylar Brodowski

Departmental Undergraduate Summer Research Scholarship (2019)

Rebecca Schelling

Departmental Undergraduate Summer Research Scholarship (2019)

Frederick S. Richardson Award for Excellence in Chemistry