Ivan V Grishagin PhD

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EXPERIENCE

2015-present *Bioinformatician*

Rancho BioSciences **Rockville, MD**

- R development: code refactoring, debugging, and optimization; building packages.
- Implemented complex statistical methods and visualization tools into a Protein Array Analyzer R package.
- Designed and developed an R-based comprehensive pipeline for integration of key public and manually curated pathway sources and elaborate visualization of pathway maps.
- VBA development: MS Excel add-ins for data curation; MS Word and MS PowerPoint macros.
- Data cleanup, harmonization, and alignment with standardized ontological vocabularies.
- Sequencing, biosensor, biological assay data analysis and visualization.
- Project management: project architecture and specifications; server organization guidelines; problem solving; liaison for development, curation and management teams.
- Interaction with clients, presales, proposal preparation.
- On-site liaison and bioinformatician at NIH NCATS.

2014-2015 *Research Fellow*

Queen's University Belfast, CCRCB **Belfast, Northern Ireland**

- Main project: repurposing FDA-approved drugs for blood cancer therapies.
- Developed a complete pipeline solution for automatic data processing of Illumina BeadArray output with R: from raw data to publication-quality figures.
- Analyzed response of leukemia to salinomycin at the transcription level using Illumina BeadArray. Processed the data, discovered and confirmed 18 significantly affected genes.
- Used connectivity mapping with Library of Integrated Cellular Signatures (LINCS) to identify approved drugs efficacious against known drivers of leukemia.
- Designed and completed a comprehensive screen of an FDA-approved drug library (760 compounds, three concentrations and two time points each) in two primary mouse cell lines. Analyzed the data and confirmed the hits in murine and human patient cells.
- Microarray, sequencing, viability assay data analysis and visualization.

2010-2014 *Research Assistant*

University of Southern California, School of Pharmacy **Los Angeles, CA**

- Determined high in vitro and in vivo anticancer efficacy of topographical mimetics of HIF1α disrupting hypoxia-dependent pathway.
- Investigated uptake, toxicity, and in vivo anticancer efficacy of rhomboidal Pt(II) metallacycles.
- Designed and completed a screen of 105 compounds to discover inhibitors of hypoxia-inducible signaling in breast cancer. Analyzed the data and confirmed the hits.
- Designed, developed, and published a complete, inexpensive, and robust method to count live mammalian cells automatically 10-15 times faster than conventional approach.
- Investigated synergy of simultaneous inhibition of MAOA and hypoxia-inducible transcription in prostate cancer.
- Supervised and taught undergraduate and junior graduate students.

2008-2010 *Research and Teaching Assistant*

University of Arizona, Department of Chemistry **Tucson, AZ**

- Optimized the synthesis of an epidithiodiketopiperazine precursor on a gram scale for a facile preparation of a designed molecule with in vivo anticancer properties.
- Conducted organic chemistry labs and related lectures for undergraduate students.
- Proctored and graded the examinations in undergraduate organic chemistry classes.

SKILLS

- Programming and Data Analysis: R, VBA, Git, ImageJ Macro Language, JavaScript, HTML5/CSS3, Python, Markdown, bash, Cypher, SQL, data mining and organization.
- Key software: R Studio, Git, MS Office 2016, ImageJ, GraphPad Prism 5, Photoshop CS6, ChemBioDraw 13, Emacs, IntelliJ IDEA, Balsamiq Mockups 3.
- Cell biology: mammalian cell culture, cell viability assays, gene expression analysis (microarray, Illumina BeadArray data processing, qRT-PCR), PCR, western blot, protein array analysis (ProtoArray), confocal and fluorescent microscopy, flow cytometry and cell sorting, luciferase reporter assay, colony formation assay, molecular cloning, protein expression and purification, high-throughput screening.
- In vivo testing: xenograft implantation into mice, IP and IV injections, euthanasia, organ harvesting, tissue handling, in vivo imaging, histology.
- Chemistry: organic synthesis, NMR, HPLC, LC-MS, IR, UV-Vis, dynamic/static light scattering.
- Languages: English (Fluent), Russian (Native), German (Intermediate), French (Intermediate).

EDUCATION

University of Southern California, School of Pharmacy **Los Angeles, CA**

PhD in Pharmaceutical Sciences (**GPA 3.91**), 2014.
Dissertation: "Small Molecule Modulators of HIF1α Signaling."

University of Arizona, Department of Chemistry **Tucson, AZ**

Attained PhD candidacy (**GPA 4.0**), 2010. Transferred to University of Southern California.

Lomonosov Moscow State University, Department of Chemistry **Moscow, Russia**

Diploma in Polymer Chemistry (**Summa cum Laude**, Gold Medal), 2008.
Thesis: "Formation of Interpolyelectrolyte Complexes in Organic Media of Low Polarity".

PUBLICATIONS

- Roulston, G.; Burt, C.; Kettyle, L.; Matchett, K.; Keenan, H.; Mulgrew, N.; Ramsey, J.; Dougan, C.; McKiernan, J.; **Grishagin, I.**; Mills, K.; & Thompson, A. Low-dose salinomycin induces anti-leukemic responses in AML and MLL. *Oncotarget* **2016**, 7(45), 73448-73461, DOI: 10.18632/oncotarget.11866
- Matchett, K.B.; **Grishagin, I.**; Kettyle, L.M.; Gavory, G.; Harrison, T.; Mills, K.I.; & Thompson, A. Mebendazole: A candidate FDA approved drug for repurposing in leukaemia. *Br. J. Haematol.* **2016**, 173(Supplement S1):5-178, DOI: 10.1111/bjh.14019
- Kettyle, L.M.; Lebert-Ghali, C.; **Grishagin, I.**; Dickson, G.J.; Bijl, J.J.; McMullin, M.F.; Lappin, T.R.; Mills, K.I.; & Thompson, A. Conditional Deletion of the HOXA Cluster in MLL-AF9 is Incompatible with Leukemia Maintenance, *Hematologica* **2016**, 101(S1), 38
- Kettyle, L.M.; **Grishagin, I.**; Dickson, G.J.; Lebert-Ghali, C.; Bijl, J.J.; Mills, K.I.; & Thompson, A. Conditional Deletion of the Hoxa Cluster in MLL-AF9 Is Incompatible with Leukemia Maintenance. *Blood* **2015**, 126(23), 3630

- **Grishagin, I.** Automatic Cell Counting with ImageJ. *Anal. Biochem.* **2014**, 473, 63-65, DOI:10.1016/j.ab.2014.12.007
- **Grishagin, I.**; Pollock, J.B.; Kushal, S.; Cook, T.R.; Stang, P.J.; Olenyuk, B.Z. In vivo anticancer activity of rhomboidal Pt(II) metallacycles. *PNAS* **2014**, 111, 52, 18448–18453, DOI: 10.1073/pnas.1418712111
- Lao, B.B.*****; **Grishagin, I.***; Mesallati, H.; Brewer, T.; Olenyuk, B.Z.; Arora, P.S. In vivo modulation of hypoxia-inducible signaling by topographical helix mimetics. *PNAS* **2014**, 111, 21, 7531-7536, DOI: 10.1073/pnas.1402393111
  ****authors contributed equally***
- Dubey, R.; **Grishagin, I.**; Nagavarapu, U.; Balan, C.; Gupta, S.; Olenyuk, B.Z. Novel selective HIF1 alpha inhibitor: Well tolerated with excellent efficacy in renal cell cancer xenograft studies. *Cancer Res.* **2015**, 74(19 Supplement), 1014, DOI:10.1158/1538-7445.AM2014-1014
- **Grishagin, I.**; Olenyuk, B.Z.; Bullock, B.; Arora, P.S. OOPs: Novel HIF-1α mimics. *Cancer Res.* **2012**, 72(8 Supplement), 283, DOI:1538-7445.AM2012-283
- Burkhardt, M.; Martinez-Castro, N.; Tea, S.; Drechsler, M.; Babin, I.; **Grishagin I.** et al. *Langmuir* **2007**, 23 (26), 12864-12874, DOI: 10.1021/la701807b

PATENTS

- Arora, P.S.; Olenyuk, B.Z.; Bullock, B.; **Grishagin, I.** Control of Hypoxia-Inducible Gene Expression with Oligooxopiperazine Nonpeptidic Helix Mimetics. US Patent 9255086 B2, Feb 09, **2016**
- Arora, P.S.; Olenyuk, B.Z.; Bullock, B.; **Grishagin, I.** Control of Hypoxia-Inducible Gene Expression with Oligooxopiperazine Nonpeptidic Helix Mimetics. International Patent WO 2013123511 A1, Aug 22, **2013**

POSTERS

- Poster, AACR meeting, Chicago, IL, US, April 1-4, **2012**, #283
- Poster, 6th International Symposium "Molecular Mobility and Order in Polymer Systems", St. Petersburg, Russia, June 2-6, **2008**
- Poster, Bayreuth Polymer Symposium, Bayreuth, Germany, September 9-11, **2007**, PI21
- Poster, 41st IUPAC World Polymer Congress, Moscow, Russia, June 27-July 1, **2005**, p.231, P9.4-23
- Poster, 5th International Symposium "Molecular Mobility and Order in Polymer Systems", St. Petersburg, Russia, June 20-24, **2005**, P-186

HONORS AND AWARDS

- Member of Phi Kappa Phi Collegiate Honor Society, US, **2014**
- Member of Rho Chi Academic Honor Society in Pharmacy, Theta Chapter, US, **2014**
- Winner of USC Norris Comprehensive Cancer Center Charles Heidelberger Predoctoral Scholarship Award in Cancer Research, Los Angeles, CA, US, **2013**
- Recipient of the Presidential Scholarship, Moscow, Russia, **2008**
- Winner of "Potanin Scholarship-2007" for the "Balance of Individualism and Leadership Qualities", Moscow, Russia, **2007**