**University of Pittsburgh**

**School of Medicine**

**CURRICULUM VITAE**

**BIOGRAPHICAL**

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| --- | --- |
| **Name:** Andrey A. Parkhitko, PhD. | **Business Phone:** (339) 368-4594 |
| **Business Address:** | **Email:** aparkhitko@pitt.edu |
| Aging InstituteBridgeside Point 1, Room 569 100 Technology DrivePittsburgh, PA 15219  |  |

**EDUCATION and TRAINING**

**GRADUATE**

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| --- | --- | --- | --- |
| **Dates Attended** | **Name and Location of Institution** | **Degree Received and Year** | **Major Subject** |
| 2000 – 2007 | Russian State Medical University, Russia—partially carried out at Fox Chase Cancer Center,Philadelphia, PA | M.S. 2007 | Biochemistry; molecular biology |
| 2008 – 2013 | Russian State Medical University, Russia—partially carried out at Brigham & Women’s Hospital,Harvard Medical School, Boston, MA | PhD. 2013 | Cancer; metabolism |

**POSTGRADUATE**

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| **Dates Attended** | **Name and Location of Institution** | **Degree Received and Year** | **Major Subject** |
| 2013-2020 | Harvard Medical School, Boston, MA*Postdoctoral Fellow*, Department of Genetics | Post-Doctoral Fellow, 2020 | Aging; cancer; metabolism |

**APPOINTMENTS and POSITIONS**

**ACADEMIC**

|  |  |  |
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| **Years Inclusive** | **Name and Location of Institution or Organization** | **Rank/Title** |
| 2006 – 2008 | Fox Chase Cancer Center,Philadelphia, PA * Advisor: Prof. Elizabeth P. Henske
 | *M.S. Student Researcher* |
| 2008 – 2013 | Brigham & Women’s Hospital, Pulmonary Division, Harvard Medical School, Boston, MA* Advisor: Prof. Elizabeth P. Henske
 | *PhD student* |
| 2013 - 2020 | Department of Genetics, Harvard Medical School, Boston, MA* Advisor: Prof. Norbert Perrimon
 | *Postdoctoral Fellow* |
| 2020 - present | Aging Institute of UPMC Division of Endocrinology and MetabolismDepartment of MedicineUniversity of Pittsburgh School of Medicine, Pittsburgh, PA | *Assistant Professor of Medicine* |

**MEMBERSHIP in PROFESSIONAL and SCIENTIFIC SOCIETIES**

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| **Organization** | **Year** |
| UPMC Hillman Cancer Center, Hillman Cancer Biology Program —associate member | 2021- present |

**HONORS**

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| **Title of Award** | **Year** |
| International LAM Research Conference Travel Award | 2008  |
| Keystone Symposia "Cell Death Pathways: Apoptosis, Autophagy and Necrosis” Travel Award | 2010 |
| International LAM Research Conference Travel Award | 2010 |
| International LAM Research Conference 1st prize for the poster presentation | 2010 |
| The LAM Foundation Fellowship Award | 2015  |
| The Charles A. King Foundation Award | 2017  |
| NIH Pathway to Independence K99/R00 Award | 2018 |
|  |  |

**PUBLICATIONS**

1. ORIGINAL PEER REVIEWED ARTICLES

1. Tang W, Pavlish OA, Spiegelman VS, **Parkhitko A**, Fuchs SY. Interaction of Epstein-Barr virus latent membrane protein 1 with SCFHOS/beta-TrCP E3 ubiquitin ligase regulates extent of NF-kappaB activation. *J Biol Chem*. 2003 Dec 5;278(49):48942-9. PMID: 14523018
2. **Parkhitko A**, Myachina F, Morrison T, Hindi K, Auricchio N, Karbowniczek M, Wu J, Finkel T, Kwiatkowski D, Yu J and Henske EP. Tumorigenesis in Tuberous Sclerosis Complex is Autophagy and p62/Sequestosome 1-dependent. *Proc Natl Acad Sci USA*. 2011 Jul 26;108(30):12455-60. PMCID: PMC3145704.
3. **Parkhitko A**, Favorova, OO and Henske EP. Rabin8 Protein Interacts with GTPase Rheb and Inhibits Phosphorylation of Ser235/Ser236 in Small Ribosomal Subunit Protein S6. *Acta Naturae*. 2011 Jul;3(3):71-6. PMCID: PMC3347604.
4. Li C, Zhou X, Sun Y, Zhang E, Mancini JD, **Parkhitko** **A**, Morrison TA, Silverman EK, Henske EP, Yu JJ. Faslodex inhibits estradiol-induced extracellular matrix dynamics and lung metastasis in a model of lymphangioleiomyomatosis. *Am J Respir Cell Mol Biol*. 2013 Jul;49(1):135-42. PMCID: PMC3727883.
5. Csibi A, Fendt SM, Li C, Poulogiannis G, Choo AY, Chapski DJ, Jeong SM, Dempsey JM, **Parkhitko A**, Morrison T, Henske EP, Haigis MC, Cantley LC, Stephanopoulos G, Yu J, Blenis J. The mTORC1 Pathway Stimulates Glutamine Metabolism and Cell Proliferation by Repressing SIRT4. *Cell*. 2013 May 9;153(4):840-54. PMCID: PMC3684628.
6. **Parkhitko A**, Priolo C, Coloff JL, Yun J, Wu JJ, Mizumura K, Xu W, Malinowska I, Yu J, Kwiatkowski DJ, Locasale JW, Asara JM, Choi A, Finkel T and Henske EP. Autophagy-dependent Metabolic Reprogramming Leads to Pentose Phosphate Pathway Addiction in Cells with Hyperactive mTORC1. 2013 *Mol Cancer Res*. 2014 Jan;12(1):48-57. PMID: 24296756
7. Li C, Lee PS, Sun Y, Gu X, Zhang E, Guo Y, Wu CL, Auricchio N, Priolo C, Li J, Csibi A, **Parkhitko** **A**, Morrison T, Planaguma A, Kazani S, Israel E, Xu KF, Henske EP, Blenis J, Levy BD, Kwiatkowski D, Yu JJ. Estradiol and mTORC2 cooperate to enhance prostaglandin biosynthesis and tumorigenesis in TSC2-deficient LAM cells. *J Exp Med*. 2014 Jan 13;211(1):15-28. PMID: 24395886
8. Khabibullin D, Medvetz DA, Pinilla M, Hariharan V, Li C, Hergrueter A, Laucho Contreras M, Zhang E, **Parkhitko** **A**, Yu JJ, Owen CA, Huang H, Baron RM, Henske EP. Folliculin regulates cell-cell adhesion, AMPK, and mTORC1 in a cell-type-specific manner in lung-derived cells. *Physiol Rep*. 2014 Aug 12;2(8). PMID: 25121506
9. Medvetz D, Sun Y, Li C, Khabibullin D, Balan M, **Parkhitko A**, Priolo C, Asara J, Pal S, Yu J, Henske EP. High-throughput Drug Screen Identifies Chelerythrine as a Selective Inducer of Death in a TSC2-null Setting. *Mol Cancer Res*. 2014 Sep 3. PMID: 25185584
10. Kayyali US, Larsen CG, Bashiruddin S, Lewandowski SL, Trivedi CM, Warburton RR, **Parkhitko** **A**, Morrison TA, Henske EP, Chekaluk Y, Kwiatkowski DJ, Finlay GA. Targeted deletion of Tsc1 causes fatal cardiomyocyte hyperplasia independently of afterload. *Cardiovasc Pathol*. 2015 Mar-Apr;24(2):80-93. doi: 10.1016/j.carpath.2014.10.005. Epub 2014 Nov 7. PMID: 25434723
11. Leshchiner E, **ParkhitkoA**, BellairsJ, BirdG, Opoku-NsiahK, GodesM, PerrimonN and Walensky LD. Direct Inhibition of Oncogenic KRAS by Hydrocarbon-Stapled SOS1 Helices. *Proc Natl Acad Sci USA*. 2015 Feb 10;112(6):1761-6. doi: 10.1073/pnas.1413185112. Epub 2015 Jan 26. PMID: 25624485
12. **Parkhitko A**, Binari R, Zhang N, Asara JM, Demontis F, Perrimon N. Tissue-specific down-regulation of S-adenosyl-homocysteine via suppression of dAhcyL1/dAhcyL2 extends health span and life span in Drosophila. *Genes Dev*. 2016 Jun 15;30(12):1409-22. doi: 10.1101/gad.282277.116. Epub 2016 Jun 16. PMID: 27313316
13. Lam HC, Baglini CV, Lope AL, **Parkhitko A**, Liu HJ, Alesi N, Malinowska IA, Ebrahimi-Fakhari D, Saffari A, Yu JJ, Pereira A, Khabibullin D, Ogorek B, Nijmeh J, Kavanagh T, Handen A, Chan SY, Asara JM, Oldham WM, Diaz-Meco MT, Moscat J, Sahin M, Priolo C, Henske EP. p62/SQSTM1 Cooperates with Hyperactive mTORC1 to Regulate Glutathione Production, Maintain Mitochondrial Integrity, and Promote Tumorigenesis. *Cancer Res*. 2017 Jun 15;77(12):3255-3267. doi: 10.1158/0008-5472.CAN-16-2458. Epub 2017 May 16. PMID: 28512249
14. Rodriguez-Muela N, **Parkhitko A**, Grass T, Gibbs RM, Norabuena EM, Perrimon N, Singh R, Rubin LL. Blocking p62-dependent SMN degradation ameliorates spinal muscular atrophy disease phenotypes. *J Clin Invest*. 2018 Jun 11. pii: 95231. doi: 10.1172/JCI95231. PMID: 29672276
15. **Parkhitko AA**, Ramesh D, Wang L, Leshchiner D, Filine E, Binari R, Olsen AL, Asara JM, Cracan V, Rabinowitz JD, Brockmann A, Perrimon N. Downregulation of the tyrosine degradation pathway extends Drosophila lifespan. *Elife*. 2020 Dec 15;9:e58053. doi: 10.7554/eLife.58053. PMID: 33319750
16. **Parkhitko A**, Singh A, Hsieh S, Hu Y, Binari R, Lord CJ, Hannenhalli S, Ryan CJ, Perrimon N. Cross-species identification of PIP5K1C-, splicing- and ubiquitin-related pathways as potential targets for RB1-deficient cells. PLoS Genet. 2021 Feb 16;17(2):e1009354. doi: 10.1371/journal.pgen.1009354. eCollection 2021 Feb. PMID: 33591981
17. **Parkhitko A**, Wang L, Binari R, Leshchiner D, Asara JM, Rabinowitz JD, Perrimon N. Genetic model of methionine restriction extends Drosophila lifespan independent of amino acid status. PNAS October 5, 2021 118 (40) e2110387118; <https://doi.org/10.1073/pnas.2110387118>
18. Jouandin P, Marelja Z, Shih YH, **Parkhitko AA**, Dambowsky M, Asara JM, Nemazanyy I, Dibble CC, Simons M, Perrimon N. Lysosomal cystine mobilization shapes the response of TORC1 and tissue growth to fasting. Science. 2022 Feb 18;375(6582):eabc4203. doi: 10.1126/science.abc4203. Epub 2022 Feb 18. PMID: 35175796
19. Terakawa A, Hu Y, Kokaji T, Yugi K, Morita K, Ohno S, Pan Y, Bai Y, **Parkhitko AA**, Ni X, Asara JM, Bulyk ML, Perrimon N, Kuroda S. Trans-omics analysis of insulin action reveals a cell growth subnetwork which co-regulates anabolic processes. iScience. 2022 Apr 8;25(5):104231. doi: 10.1016/j.isci.2022.104231. eCollection 2022 May 20.

PMID: 35494245

2. OTHER PEER REVIEWED PUBLICATIONS

1. Yu J, **Parkhitko A**, Henske EP. Mammalian target of rapamycin signaling and autophagy: roles in lymphangioleiomyomatosis therapy. *Proc Am Thorac Soc* Vol 7. pp 48–53, 2010. PMCID: PMC3137149.
2. Yu J, **Parkhitko A** and Henske EP. Autophagy: an ‘Achilles’ heel of tumorigenesis in TSC and LAM. *Autophagy*. 2011 Nov 1;7(11):1400-1. PMCID: PMC3242802.
3. **Parkhitko A**, Favorova OO, Henske EP. Autophagy: mechanisms, regulation, and its role in tumorigenesis. *Biochemistry (Mosc)*. 2013 Apr;78(4):355-67. PMID: 23590438
4. **Parkhitko** **A**, Favorova OO, Khabibullin DI, Anisimov VN, Henske EP. Kinase mTOR: regulation and role in maintenance of cellular homeostasis, tumor development, and aging. *Biochemistry (Mosc)*. 2014 Feb;79(2):88-101. PMID: 24794724
5. **Parkhitko A**, Jouandin P, Mohr SE, Perrimon N. Methionine metabolism and methyltransferases in the regulation of aging and lifespan extension across species. *Aging Cell*. 2019 Dec;18(6):e13034. doi: 10.1111/acel.13034. Epub 2019 Aug 28. Review. PMID: 31460700
6. **Parkhitko A**, Filine E, Mohr SE, Moskalev A, Perrimon N. Targeting metabolic pathways for extension of lifespan and healthspan across multiple species. *Ageing Res Rev*. 2020 Oct 5;101188. doi: 10.1016/j.arr.2020.101188. Review. PMID: 33031925
7. Mkrtchyan GV, Abdelmohsen K, Andreux P, Bagdonaite I, Barzilai N, Brunak S, Cabreiro F, de Cabo R, Campisi J, Cuervo AM, Demaria M, Ewald CY, Fang EF, Faragher R, Ferrucci L, Freund A, Silva-García CG, Georgievskaya A, Gladyshev VN, Glass DJ, Gorbunova V, de Grey A, He WW, Hoeijmakers J, Hoffmann E, Horvath S, Houtkooper RH, Jensen MK, Jensen MB, Kane A, Kassem M, de Keizer P, Kennedy B, Karsenty G, Lamming DW, Lee KF, MacAulay N, Mamoshina P, Mellon J, Molenaars M, Moskalev A, Mund A, Niedernhofer L, Osborne B, Pak HH, **Parkhitko A**, Raimundo N, Rando TA, Rasmussen LJ, Reis C, Riedel CG, Franco-Romero A, Schumacher B, Sinclair DA, Suh Y, Taub PR, Toiber D, Treebak JT, Valenzano DR, Verdin E, Vijg J, Young S, Zhang L, Bakula D, Zhavoronkov A, Scheibye-Knudsen M. ARDD 2020: from aging mechanisms to interventions. Aging (Albany NY). 2020 Dec 30;12(24):24484-24503. doi: 10.18632/aging.202454. Epub 2020 Dec 30. PMID: 33378272

**Google Scholar**: https://scholar.google.com/citations?user=kxh0czMAAAAJ&hl=en

**PROFESSIONAL ACTIVITIES**

**TEACHING**

**High School Teaching:**

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| August 2015 | The 2015 School of Molecular and Theoretical Biology—Total: 10 high-school students | Puschino, Russia, Principal Investigator, 8-10 hours/day/21days |
| August 2016 | The 2016 School of Molecular and Theoretical Biology-- Total: 10 high-school students | Barcelona, Spain,Principal Investigator,8-10 hours/day/21days |
| August 2017 | The 2017 School of Molecular and Theoretical Biology-- Total: 10 high-school students | Barcelona, Spain,Principal Investigator,8-10 hours/day/21days |

**Graduate Teaching:**

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| January-April 2022 | MSMGDB 3560: Molecular Mechanisms of Longevity & Aging course—Total: N/A | University of Pittsburgh, Lecturer,1 lecture |
| September 6, 2022-April 4, 2023 | Molecular Genetics & Developmental Biology Research in Progress Course—12 graduate students | University of Pittsburgh, Director and Lecturer,14 sessions /semester |

**High-school Mentoring:**

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| Summer 2021 | Myka LichiusContext: a high school student through the Hillman Academy. Mentoring Role: Mentor. Achievements: N/A |

**Undergraduate Mentoring:**

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| Previous | Elizabeth FilineMentoring Role: Mentor. Achievements: N/A. Current Position: Research Technician, Harvard Medical School. |
| Previous | Dmitry LeshchinerMentoring Role: Mentor. Achievements: N/A. Current Position: Postdoctoral fellow, Michigan State University |
| Current | Aidan GrahamMentoring Role: Mentor. Achievements: N/A. Current Position: N/A |
| Current | Max AbornMentoring Role: Mentor. Achievements: N/A. Current Position: N/A |
| Current | Tiffany Fuentes GonzalesMentoring Role: Mentor. Achievements: N/A. Current Position: N/A |
| Current | Shrikar ThotaMentoring Role: Mentor. Achievements: N/A. Current Position: N/A |
| Current | Roshan PatelMentoring Role: Mentor. Achievements: N/A. Current Position: N/A |
| Current | Christian SmarzMentoring Role: Mentor. Achievements: N/A. Current Position: N/A |

**RESEARCH**

**Current Grant Support:**

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| --- | --- | --- | --- | --- |
| **Grant Number (funded)** | **Grant Title** | **Role in Project****%Effort** **(must not exceed 100%)****Calendar Months** **(must not exceed 12 months** | **Years Inclusive** | **Source $ Amount****(include direct and indirect if PI)****(If Co-I list sub-award)** |
| P30AG068635 | Defining downstream mechanisms of methionine restriction by using single-cell sequencing | PI0 % Effort | 10/24/2022- 5/31/2023 | San Diego Nathan Shock CenterDirect ≤$20,000Indirect$0Total≤ $20,000 |
| R35GM146869 | Deciphering the crosstalk between methionine metabolism and methyltransferases in health and disease | PI51% Effort | 9/1/22-7/31/23 | NIGMSDirect$250,000Indirect$147,500Total$397,500 |
| R03AG075651 | Tyrosine degradation pathway in mitochondrial dysfunction and aging | PIN/A % Effort | 9/30/2022-6/30/2023 | NIADirect$50,000 Indirect$29,500Total$79,500 |
| 3R00AG057792-05S1 | Studying methionine flux and its role in aging and neurodegeneration | PI0% Effort | 9/1/2020-5/31/2023 | NIASupplement Direct$110,000Indirect$14,698Total$124,698 |
| Oklahoma Nathan Shock Center Pilot Award | N/A | PI0 %Effort | 11/15/2021 | Oklahoma Nathan Shock Center$12,000 |
| University of Washington Nathan Shock Center Pilot Award | N/A | PI0 %Effort | 6/21/2021 | University of Washington Nathan Shock Center <$10,000 |
| N/A; KARAT pilot Grant | Targeting PRMT5 or E(z) methyltransferases to delay frailty, improve motor function, and modulate epigenetic clocks | PI0% Effort | 1/1/2022 – 1/1/2023 | KARAT$50,000 |
| R00AG057792 | Studying methionine flux and its role in aging and neurodegeneration | PI41% Effort | 9/1/2020 – 8/31/2023 | NIADirect$476,890Indirect$269,773Total$746,663 |

**Pending Grant Support:**

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| --- | --- | --- | --- | --- |
| **Grant Number (funded)** | **Grant Title** | **Role in Project****%Effort (must not exceed 100%)****Calendar Months (must not exceed 12 months** | **Years Inclusive** | **Source $ Amount****(include direct and indirect if PI)****(If Co-I list sub-award)** |
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**Prior Grant Support:**

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| --- | --- | --- | --- | --- |
| **Grant Number (funded)** | **Grant Title** | **Role in Project****%Effort (must not exceed 100%)****Calendar Months (must not exceed 12 months** | **Years Inclusive** | **Source $ Amount****(include direct and indirect if PI)****(If Co-I list sub-award)** |
| N/A; Pepper Pilot Grant | Targeting methionine and tyrosine metabolism to delay frailty, improve motor function, and modulate the 'epigenetic clock' | Co-I5% Effort | 9/01/2020 – 9/01/2022 | Claude D. Pepper Older Americans Independence Center$75,000 |
| N/A; CMRF | Cross-species approach to identify novel synthetic lethal interactions in RB1 deficient cells | PI0%Effort | 7/1/2021 – 6/30/2022 | CMRF$26,773 |
| N/A | Studying methionine flux and its role in aging and neurodegeneration | PI100%Effort | 11/1/2017 – 10/31/2019(terminated 2/1/2018 because of K99/R00 award) | The Charles A. King Foundation$53,200 (direct/year) |
| LAM00105E01-15  | “A Cross-Species Approach to the Discovery of Genes Accelerating TSC/LAM Tumor Growth” | (PI: Parkhitko, Mentor: Perrimon)100%Effort | 1/15/2015 – 1/14/2018  | The LAM Foundation$50,000 (direct/year) |
| Parent K99/R00 | “Studying methionine flux and its role in aging and neurodegeneration”. | PI100%Effort | 2/2018-9/2020 | NIADirect$182,878Indirect$14,630Total$197,508 |

**Other research related activities**

* Editorships
	+ Guest Editor for Plos Genetics
* Ad hoc journal reviewing:
	+ Molecular Metabolism, Autophagy, Cell Stress, Nature Aging, Proc Natl Acad Sci USA, Journal of Biomedical Science, Nature Communications
* Study section memberships
	+ MONC study section; Meeting Date: Feb. 28th, and March 1st, 2022
	+ CMAD study section

**LIST of CURRENT RESEARCH INTERESTS**

* aging
* metabolism
* cancer
* lifespan
* health span
* methionine
* metabolism
* tyrosine metabolism

**INVITED SEMINARS AND LECTURESHIPS**

Local Presentations

* Harvard Medical School, Polycystic Kidney Disease May Symposium, Boston MA 2011
* UPMC Hillman Cancer Center, Cancer Biology Program/Women’s Cancer Research Center Weekly Seminar Series, N/A (via Zoom) 2021
* UPMC Hillman Cancer Center, Pittsburgh Sarcoma Research Collaborative (PSaRC) meeting, N/A (via Zoom) 2021
* Duquesne University, Department of Biology, Pittsburgh (invited speaker, in-person) 2021
* University of Pittsburgh, Medicine Grand Rounds, 2021
* University of Pittsburgh, Renal Research Grand Rounds, 2022
* University of Pittsburgh, Senior Vice Chancellor's Research Seminar Series, 2022

National Presentations

* The LAM Foundation, International Conference on LAM Cincinnati, OH 2008
* The LAM Foundation, 2010 International conference on LAM Cincinnati, OH 2008 (oral presentation)
* Cold Spring Harbor Laboratories, Molecular biology of aging, Long Island, NY 2014
* National Institute of Aging, Summer Training Course, Seattle, WA 2017
* Cold Spring Harbor Laboratories, Mechanisms of aging, Long Island, NY 2018
* Glenn Foundation for Medical Research, Fourth Annual Northeastern Glenn Symposium on the Biology of Aging, New Haven, CT 2018
* Gordon Research Conferences, Gordon Research Conference on the Biology of Aging, Newry, ME 2019
* Biology of Aging Seminar, Brown University, Providence, Rhode Island 2022
* Orentreich Foundation for the Advancement of Science, Cold Spring-on-Hudson, NY, 2022
* Gordon Research Conferences, Gordon Research Conference on the Systemic Processes, Omics Approaches and Biomarkers in Aging, Newry, ME 2022 (poster presentation)
* AGE 2023 Oklahoma City June 5-11, 2023

International Presentations

* Keystone Symposia, Keystone Cell Death Pathways: Apoptosis, Autophagy and Necrosis. Vancouver, British Columbia, Canada 2010
* Gordon Research Conference, Autophagy in Stress, Development & Disease, Italy 2010
* Keystone Symposia, Keystone Autophagy Conference, Whistler, Canada 2011
* EMBO, Autophagy in Health and Disease, Israel 2011
* School of Molecular and Theoretical Biology, Puschino, Russia 2015
* School of Molecular and Theoretical Biology, Pompeu Fabra University, Barcelona, Spain 2016
* School of Molecular and Theoretical Biology, Pompeu Fabra University, Barcelona, Spain 2017
* N/A, Interventions to extend healthspan and lifespan, Kazan, Russia 2018
* SENS Research Foundation and Forever Healthy Foundation, Undoing Aging, Berlin, Germany 2019
* Cold Spring Harbor Asia, Stem Cells, Aging & Rejuvenation, Suzhou, China 2019
* N/A, The 7th Aging Research and Drug Discovery Meeting, N/A (via Zoom) 2020
* eLife, Aging, Geroscience and Longevity Symposium, NA (via Zoom) 2021
* ARDD, The 9th Aging Research & Drug Discovery Meeting, Copenhagen, Denmark 2022