**Curriculum vitae**

**Personal details:**

Name: Judit Pénzes

Nationality: Hungarian

Residency: Gainesville, Florida, United States

Date of birth: 12th October, 1987

Place of birth: Kazincbarcika, Hungary

Telephone: +1 352 871 4905

E-mail: judycash08@gmail.com, judit.penzes@rutgers.edu

**Current position:**

2021, August - present: Postdoctoral associate

Rutgers University, Center for Integrative Proteomics Research

Piascataway, NJ, USA

- PI: Dr. Jason Kaelber

**Current research topics:**

- In situ structural virology of parvoviruses by cryo electron tomography (cryoET) and fixed ion beam milling (cryoFIB)

- Structural studies on parvo- and densoviral capsid proteins using cryo electron microscopy (cryoEM)

- Virus-host interactions of parvoviruses

- Intracellular trafficking of parvoviruses

**Earlier Positions:**

**2017, August – 2021 July: Postdoctoral associate**

University of Florida, Department of Biochemistry and Molecular Biology, The McKnight Brain Institute

Gainesville, FL, USA

- PI: Dr. Mavis Agbandje-McKenna

- Structural studies on parvo- and densoviral capsid proteins using cryoEM

- Phylogeny, genomics, structure and evolution of endogenous parvovirus-like elements and their expressed proteins

- Virus-host interactions of parvoviruses

- Intracellular trafficking of parvoviruses

- Adeno-associated virus-mediated gene therapy in collaboration with Voyager Therapeutics, Cambridge, Massachusetts, USA

2015, August – 2017 July: Postdoctoral associate

INRS Institut Armand Frappier, Laval, QC, Canada (a member of the Pasteur Institute network)

 - PI: Dr. Peter Tijssen

- Diversity, evolution, transcription and protein expression studies of Orthopteran and Crustacean densoviruses and reptilian adeno-associated viruses

2015, May - 2015, August: Research fellow

Institute for Veterinary Medical Research, Centre for Agricultural Research, Hungarian Academy of Sciences, Budapest, Hungary
- PI: Dr. Mária Benkő and Dr. Balázs Harrach

- Evolution and diversity of reptilian and amphibian adeno-, parvo- and circoviruses

2011, September - 2015, May: Junior research fellow

Institute for Veterinary Medical Research, Centre for Agricultural Research, Hungarian Academy of Sciences, Budapest, Hungary
- PI: Dr. Mária Benkő and Dr. Balazs Harrach

- Evolution and diversity of reptilian and amphibian adeno-, parvo- and circoviruses

2009, September - 2011, August: MSc research student

Institute for Veterinary Medical Research, Centre for Agricultural Research, Hungarian Academy of Sciences, Budapest, Hungary

- PI: of Dr. Mária Benkő and Dr. Balázs Harrach

- Phylogeny and genomics of reptilian adenoviruses

- Pathology and diagnostics of deceased exotic animals

2007, September - 2009, August: BSc research student

Institute for Veterinary Medical Research, Centre for Agricultural Research, Hungarian Academy of Sciences, Budapest, Hungary

- PI: Dr. Mária Benkő and Dr. Balázs Harrach

-Phylogeny of reptilian adenoviruses

**Scientific committee memberships:**

2022, September – present: WHO expert as a member of the WHO *Parvoviridae* viral family group

2021, March – present: *Bidnaviridae*Study Group, International Committee on Taxonomy of Viruses (ICTV), study group chair

2019, March – present: *Parvoviridae* Study Group, ICTV, study group chair

2018, July – present:), Parvoviridae study group, ICTV, membership

**Scientific society memberships:**

2020, January – present: National Shellfisheries Association

2019, January - present: American Society for Virology, membership

2014, May - 2016, May: Association of Reptilian and Amphibian Veterinarians (ARAV), membership

**Studies:**

2011, September - 2015 May: PhD student

University of Veterinary Medicine, Budapest, Hungary

- Thesis: Evolution and diversity of adeno- and parvoviruses infecting reptiles and amphibians - Qualification: *Summa cum laude*

2010-2011: MSc University student

University of Veterinary Medicine, Budapest, Hungary

- MSc in Biology

- Degree: excellent

- Thesis: Adenovirus detection in reptiles and amphibians: partial genome-analysis of one frog- and two lizard-adenoviruses

2009-2010: MSc University Student

Eötvös Loránd University, Faculty of Science, Budapest, Hungary

- MSc in Biology

- Member of Bolyai College (a student college for outstanding university students of science)

2006-2009: BSc University Student

University of Veterinary Medicine, Budapest, Hungary

- BSc in Biology

- Degree: excellent

- Thesis: Examinations aiming at the verification of the reptilian origin of atadenoviruses

**Short-term internships**

August, 2016: Protein assays and structural studies on reptilian parvoviruses

University of Florida, Center for Structural Biology, Gainesville, FL, USA

- McKenna lab, under supervision of Dr. Mavis Agbandje-McKenna

July to August, 2014: Analysis and cloning of complicated DNA secondary structures

INRS-Institute Armand Frappier, Laval, QC, Canada

- Tijssen lab, under supervision of Dr. Peter Tijssen

**Teaching experience:**

2013, February - May: Virology practical for 2nd grade veterinary students

University of Veterinary Medicine, Budapest, Hungary

2011, October – 2015, August: Supervising the thesis work of three BSc in biology students

Institute for Veterinary Medical Research, Centre for Agricultural Research, Hungarian Academy of Sciences, Budapest, Hungary

2020 September – 2021 August: Supervising the thesis work and lab technician work of an MSc in Microbiology student, University of Florida, Gainesville, FL, USA

2021, September – present: Supervising the undergraduate research projects of three undergraduate students, Rutgers University, Piscataway, NJ, USA

**Publications in peer-reviewed journals**

**First author:**

Bipartite genome and structural organization of the parvovirus Acheta domesticus segmented densovirus. Pénzes JJ, Pham HT, Chipman P, Smith EW, McKenna R, Tijssen P. Nat Commun. 2023 Jun 14;14(1):3515. doi: 10.1038/s41467-023-38875-x

AAV9 Structural Rearrangements Induced by Endosomal Trafficking pH and Glycan Attachment. Penzes JJ, Chipman P, Bhattacharya N, Zeher A, Hunag R, McKenna R, Agbandje-McKenna M. J Virol. 2021 14;JVI0084321. doi: 10.1128/JVI.00843-21

Molecular biology and structure of a novel penaeid shrimp densovirus elucidate convergent parvoviral host capsid evolution.
Pénzes JJ, Pham HT, Chipman P, Bhattacharya N, McKenna R, Agbandje-McKenna M, Tijssen P. Proc Natl Acad Sci U S A. 2020 Aug 18;117(33):20211-20222. doi: 10.1073/pnas.2008191117.

Evolution of dependoparvoviruses across geological timescales-implications for design of AAV-based gene therapy vectors.
Hildebrandt E\*, Penzes JJ\*, Gifford RJ, Agbandje-Mckenna M, Kotin RM. Virus Evol. 2020 May 22;6(2):veaa043. doi: 10.1093/ve/veaa043.

The complete genome sequence of bearded dragon adenovirus 1 harbors three genes encoding proteins of the C-type lectin-like domain superfamily.
Pénzes JJ, Szirovicza L, Harrach B. Infect Genet Evol. 2020 Sep;83:104321. doi: 10.1016/j.meegid.2020.104321. Epub 2020 Apr 14.

Reorganizing the family *Parvoviridae*: a revised taxonomy independent of the canonical approach based on host association.
Pénzes JJ, Söderlund-Venermo M, Canuti M, Eis-Hübinger AM, Hughes J, Cotmore SF, Harrach B. Arch Virol. 2020 Sep;165(9):2133-2146. doi: 10.1007/s00705-020-04632-4.

Twenty-Five Years of Structural Parvovirology.
Mietzsch M\*, Pénzes JJ\*, Agbandje-McKenna M. Viruses. 2019 Apr 20;11(4):362. doi: 10.3390/v11040362.

An Ancient Lineage of Highly Divergent Parvoviruses Infects both Vertebrate and Invertebrate Hosts.
Pénzes JJ, de Souza WM, Agbandje-McKenna M, Gifford RJ. Viruses. 2019 Jun 6;11(6):525. doi: 10.3390/v11060525.

Endogenous amdoparvovirus-related elements reveal insights into the biology and evolution of vertebrate parvoviruses.
Pénzes JJ, Marsile-Medun S, Agbandje-McKenna M, Gifford RJ. Virus Evol. 2018 Nov 12;4(2):vey026. doi: 10.1093/ve/vey026.

Novel parvoviruses in reptiles and genome sequence of a lizard parvovirus shed light on Dependoparvovirus genus evolution.
Pénzes JJ, Pham HT, Benkő M, Tijssen P. J Gen Virol. 2015 Sep;96(9):2769-2779. doi: 10.1099/vir.0.000215.

Molecular characterization of a lizard adenovirus reveals the first atadenovirus with two fiber genes and the first adenovirus with either one short or three long fibers per penton.
Pénzes JJ\*, Menéndez-Conejero R\*, Condezo GN, Ball I, Papp T, Doszpoly A, Paradela A, Pérez-Berná AJ, López-Sanz M, Nguyen TH, van Raaij MJ, Marschang RE, Harrach B, Benkő M, San Martín C. J Virol. 2014 Oct;88(19):11304-14. doi: 10.1128/JVI.00306-14.

Novel parvovirus from the worm lizard Trogonophis wiegmanni - First virus ever detected in amphisbaenian hosts.
Pénzes JJ, Benkő M. Acta Vet Hung. 2014 Jun;62(2):284-92. doi: 10.1556/AVet.2014.010.

Adenovírusos fertőzöttség kimutatása szakállas agámákban (*Pogona vitticeps*) Magyarországon. [Detection of adenoviral infection in bearded dragons (*Pogona vitticeps*) in Hungary. In Hungarian] Pénzes J, Doszpoly A (2011)

Magyar Állatorvosok Lapja 133, 432-437.

\*Equal contribution

**Book Chapter:**
Parvoviruses of Invertebrates (Densoviruses), 14 printed pages in proofs.

Judit J Pénzes, Hanh T Pham, Qian Yu, Max Bergoin and Peter Tijssen
Encyclopedia of Virology, 4th edition (to be published Spring 2021); Reference Module in Life Science, Elsevier. doi:10.1016/B978-0-12-814515-9.00009-6

**Last author:**

A novel cetacean adenovirus in stranded harbour porpoises from the North Sea: detection and molecular characterization.
van Beurden SJ, Ijsseldijk LL, van de Bildt MWG, Begeman L, Wellehan JFX Jr, Waltzek TB, de Vrieze G, Gröne A, Kuiken T, Verheije MH, Penzes JJ.
Arch Virol. 2017 Jul;162(7):2035-2040. doi: 10.1007/s00705-017-3310-8.

Random Sampling of Squamate Reptiles in Spanish Natural Reserves Reveals the Presence of Novel Adenoviruses in Lacertids (Family Lacertidae) and Worm Lizards (Amphisbaenia).
Szirovicza L, López P, Kopena R, Benkő M, Martín J, Pénzes JJ. PLoS One. 2016 Jul 11;11(7):e0159016. doi: 10.1371/journal.pone.0159016.

**Further Publications:**

A new perspective on the evolution and diversity of the genus *Amdoparvovirus* (family *Parvoviridae*) through genetic characterization, structural homology modeling, and phylogenetics. Canuti M, Pénzes JJ, Lang AS. Virus Evol. 2022 Jun 17;8(1):veac056. doi: 10.1093/ve/veac056. PMID: 35783582; PMCID: PMC9242002.

Characterization of the Serpentine Adeno-Associated Virus (SAAV) Capsid Structure: Receptor Interactions and Antigenicity. Mietzsch M, Hull JA, Makal VE, Jimenez Ybargollin A, Yu JC, McKissock K, Bennett A, Penzes J, Lins-Austin B, Yu Q, Chipman P, Bhattacharya N, Sousa D, Strugatsky D, Tijssen P, McKenna R, Agbandje-McKenna M. J Virol. 2022 Jun 8;96(11):e0033522. doi: 10.1128/jvi.00335-22. Epub 2022 May 9. PMID: 35532224; PMCID: PMC9175632.

ICTV Virus Taxonomy Profile: Parvoviridae.
Cotmore SF, Agbandje-McKenna M, Canuti M, Chiorini JA, Eis-Hubinger AM, Hughes J, Mietzsch M, Modha S, Ogliastro M, Pénzes JJ, Pintel DJ, Qiu J, Soderlund-Venermo M, Tattersall P, Tijssen P, ICTV Report Consortium. J Gen Virol. 2019 Mar;100(3):367-368. doi: 10.1099/jgv.0.001212.

Diversity of small, single-stranded DNA viruses of invertebrates and their chaotic evolutionary past.
Tijssen P, Pénzes JJ, Yu Q, Pham HT, Bergoin M. J Invertebr Pathol. 2016 Oct;140:83-96. doi: 10.1016/j.jip.2016.09.005.

Hyperplastic stomatitis and esophagitis in a tortoise (Testudo graeca) associated with an adenovirus infection.
Garcia-Morante B, Pénzes JJ, Costa T, Martorell J, Martínez J. J Vet Diagn Invest. 2016 Sep;28(5):579-83. doi: 10.1177/1040638716659903.

Using the E4orf6-Based E3 Ubiquitin Ligase as a Tool to Analyze the Evolution of Adenoviruses.
Gilson T, Blanchette P, Ballmann MZ, Papp T, Pénzes JJ, Benkő M, Harrach B, Branton PE. J Virol. 2016 Jul 27;90(16):7350-7367. doi: 10.1128/JVI.00420-16.

First detection of circovirus-like sequences in amphibians and novel putative circoviruses in fishes.
Tarján ZL, Pénzes JJ, Tóth RP, Benkő M. Acta Vet Hung. 2014 Mar;62(1):134-44. doi: 10.1556/AVet.2013.061.

**Pending patent:**

Patent WGS Ref. No. U1196.70087US00 (submitted and pending):
Mietzsch M\*, Penzes JJ\*, Agbandje-McKenna: Engineering AAV Vectors with Improved CNS Targeting

\*: contributed equally

**Taxonomy proposals:**

Penzes JJ, Canuti M, Francois S, Söderlund-Venermo M, Tijssen P, Tattersall P (2023) Creating 13 new species in family *Parvoviridae*

Penzes JJ, Canuti M, Söderlund-Venermo M, Francois S (2022) *Parvoviridae*: introduction of the binomial nomenclature, establishment of two new genera and the classification eligibility of parvoviruses derived from ambiguous host origin

Penzes JJ, Soderlund-Venermo M, Canuti M, Eis-Huebinger AM, Ogliastro M, Harrach B (2020) Create three new genera and 19 new species in the family *Parvoviridae* (*Piccovirales*)

Penzes JJ, Soderlund-Venermo M, Canuti M, Eis-Huebinger AM, Hughes J, Cotmore SF (2019) Reorganizing the family *Parvoviridae*: a novel taxonomy independent from the canonical approach based on host affiliation

Penzes JJ (2018) Introduction of new species to genus *Dependoparvovirus* of *Parvoviridae*

**Conference scientific committee participation:**

2022, September 27 to October 1, Seté, France: scientific committee member, chair of the session “Genome replication and gene expression” at the International Symposium on Single-Stranded DNA Viruses

* Keynote lecture: The reptilian perspective; bearded dragon parvovirus (*Parvoviridae*) provides new insights on dependoparvoviral molecular and structural diversity

**Conference abstracts and proceedings (only first author ones listed):**

2021: The First Conference of the World Society for Virology

- presentation:

Judit J Penzes, Hanh T Pham, Mavis Agbandje-McKenna, Peter Tijssen: The capsid structure of Acheta domestica segmented densovirus, a novel parvovirus with a bipartite genome, reveals a unique surface morphology and potential DNA packaging strategy (South Africa, online)

2021: 113th Annual Meeting National Shellfisheries Association

- Keynote presentation as an invited speaker:
Judit J Penzes, Hanh T Pham, Mavis Agbandje-McKenna, Peter Tijssen: Molecular biology and structure of a novel penaeid shrimp densovirus elucidate convergent parvoviral host capsid evolution (USA, online)

2019: 38th Annual Meeting of the American Society For Virology, Minneapolis, MN, USA

- presentation: J Penzes, P Tijssen, M Agbandje-McKenna: Capsid structure of a new densovirus of the prawn *Penaeus monodon* reveals new insights on parvovirus capsid evolution and possible trafficking routes

2018**:** XVIIth International Parvovirus Workshop, Miami Beach, FL, USA

- presentation: J Penzes, HT Pham, M Agbandje-McKenna, P Tijssen: A novel densovirus of the prawn Peneaus monodon of a new lineage within subfamily Densovirinae harbors a unique genome organization, transcription pattern, and possible cellular trafficking routes

2016: XVIth International Parvovirus Workshop, Ajaccio, France

- presentation: J Penzes, HT Pham, M. Bergoin and P Tijssen (2016) A novel cricket densovirus is the first parvovirus harboring a segmented genome

- poster: J Penzes, HT Pham, P Tijssen (2016) A novel densovirus of the prawn *Peneaus monodon* harbors a unique genome organization and represents a new linage within subfamily Densovirinae

2014: Combined Exotics and Avian Conference – Tropical and Tropical, Cairns, Australia

- released as proceeding

- presentation: J Pénzes, P Lopez, J Martin, B Harrach, M Benkő (2014)

Novel adeno- and parvoviruses in reptiles; first virus detections ever in suborder Amphisbaenia

2013:5th European Wildlife Disease Association Student Workshop, Veyrier-du-Lac, France

- poster: Pénzes J, Harrach B, Benkő M (2013)

Novel parvoviruses in reptiles: first results concerning autonomous replication of reptilian dependoviruses supports the Diapsida-origin of genus *Dependovirus*

2012: 10th International Adenovirus Meeting, Umeå, Sweden

- poster: J Pénzes, I Romanova, T Papp, A Doszpoly, RE Marschang, B Harrach (2012)

Genome sequencing and analysis of two novel lizard adenoviruses

- Best Poster of the Congress Award

2012: International Conference on Reptile and Amphibian Medicine, Cremona, Italy

- released as proceeding

- presentation: J Pénzes, M Benkő (2012)

Prevalence and diversity of adenoviruses and parvoviruses detected in samples of reptiles and frogs kept in captivity

2011: 4th European Wildlife Disease Association Student Workshop, Veyrier-du-Lac, France

- poster: J Pénzes, A Doszpoly, M Benkő, B Harrach (2011)

Novel amphibian and reptile adenoviruses provide further proofs for the reptilian origin of atadenoviruses

2011: 21st Annual Meeting of the Gesellschaft fur Virologie (GfV) Freiburg, Germany

- poster: J Pénzes, I Romanova, T Papp, A Doszpoly, B Harrach, R Marschang(2011)

 Genome Sequencing and Analysis of Two Novel Lizard Adenoviruses

2010: 8th International Symposium on Viruses of Lower Vertebrates, Santiago de Compostella, Spain

- presentation: : J Pénzes, A Doszpoly, M Benkő (2010)

Examinations aiming at the verification of the reptilian origin of atadenoviruses

2009: ESVV 8th International Congress of Veterinary Virology, Budapest, Hungary

- poster: J Pénzes, A Doszpoly, M Benkő (2009)

 Examinations aiming at the verification of the reptilian origin of atadenoviruses

- Best Poster of the Congress Award

2009: Annual Conference of Hungarian Society of Veterinarians for Animals in the Wild and Zoo, Medicine of Lower Vertebrates, Budapest, Hungary

- poster: J Pénzes, A Doszpoly, M Benkő (200)

 Screening of various reptile samples by a PCR method targeting the adenovirus polymerase gene [in Hungarian]

**Grants and awards:**

March 2020

**-** Travel award and keynote speaker invitation:Jimmy Alcivar-Arteaga Research and Travel Award, ONE HEALTH Genomes and Microbiomes: From Soil to People workshop (online)

Apr 2013

-Grant: Participation grant at 5th European Wildlife Disease Association Student Workshop, Veyrier-du-Lac, France

Jun 2012

- Award: Best poster of 10th International Adenovirus Meeting, Umeå, Sweden

Apr 2011

-Grant: Participation grant at 4th European Wildlife Disease Association Student Workshop, Veyrier-du-Lac, France

Sep 2009

-Award: Best poster of ESVV 8th International Congress of Veterinary Virology, Budapest, Hungary

**Language skills:**

English (fluent), German (intermediate), Swedish (intermediate), French (intermediate), Hungarian as a mother tongue