

Pekka Uimari  
professor,Handledare för doktorandprogram, Titeln docent  
Avdelningen för lantbruksvetenskaper  
Avdelningen för lantbruksvetenskaper  
Helsinki One Health (HOH)  
Animal Science Research  
Doctoral Programme in Clinical Veterinary Medicine  
Doctoral Programme in Sustainable Use of Renewable Natural Resources  
**Postadress:**  
PL 28 (Koetilantie 5)  
00014  
Finland  
**Postadress:**  
Viikinkaari 1  
Biokeskus 3  
00790  
Helsinki  
Finland  
**E-post:** pekka.uimari@helsinki.fi  
**Telefon:** +358294159510  
**Mobil:** +358504160426

## **Anställning**

### **professor**

Avdelningen för lantbruksvetenskaper  
Helsingfors universitet  
Finland  
1 sep. 2013 → present

### **Titeln docent**

Avdelningen för lantbruksvetenskaper  
Helsingfors universitet  
Finland  
1 jan. 2010 → present

### **Helsinki One Health (HOH)**

Helsingfors universitet  
HELSINGIN YLIOPISTO, Finland  
1 jan. 2019 → present

### **Animal Science Research**

Helsingfors universitet  
University of Helsinki, Finland  
1 aug. 2001 → present

### **Handledare för doktorandprogram**

Doctoral Programme in Clinical Veterinary Medicine  
Helsingfors universitet  
Finland  
1 jan. 2014 → present

### **Handledare för doktorandprogram**

Doctoral Programme in Sustainable Use of Renewable Natural Resources  
Helsingfors universitet  
Helsinki, Finland  
1 jan. 2014 → present

## **Tutkimuspäällikkö**

MTT

Finland

1 nov. 2011 → 31 aug. 2013

## **Erikoistutkija**

MTT

Finland

1 mars 2009 → 31 aug. 2018

## **Tutkija**

Jurilab Ltd

Finland

1 aug. 2002 → 28 feb. 2009

## **Forskningsoutput**

### **Novel runs of homozygosity islands in the Finnish Ayrshire population**

Sarviaho, K. J., Uimari, P. & Martikainen, K., 28 aug. 2023, *Book of Abstracts of the 74th Annual Meeting of the European Federation of Animal Science*. 29 red. Wageningen Academic Publishers, s. 164 164 s.

### **Thigh muscle metabolic response is linked to feed efficiency and meat characteristics in slow-growing chicken**

Kaewsatuan, P., Poompramun, C., Kubota, S., Yongsawatdigul, J., Molee, W., Uimari, P. & Molee, A., juli 2023, I: *Poultry Science*. 102, 7, 11 s.

### **Estimating inbreeding rate and effective population size in the Finnish Ayrshire population in the era of genomic selection**

Sarviaho, K. J., Uimari, P. & Martikainen, K., maj 2023, I: *Journal of Animal Breeding and Genetics*. 140, 3, s. 343-353 11 s.

### **Disease detection in pigs based on feeding behaviour traits using machine learning**

Kavлак, A. T., Pastell, M. & Uimari, P., feb. 2023, I: *Biosystems Engineering*. 226, s. 143-143 1 s.

### **Heritability of the elk hunting traits in the Finnish Jamthund population**

Sarviaho, K. J. & Uimari, P., 20 jan. 2023, I: *Acta Agriculturae Scandinavica. Section A. Animal Science*. 10 s.

### **Comparative proteomics revealed duodenal metabolic function associated with feed efficiency in slow-growing chicken**

Kaewsatuan, P., Poompramun, C., Kubota, S., Yongsawatdigul, J., Molee, W., Uimari, P. & Molee, A., juni 2022, I: *Poultry Science*. 101, 6, 11 s., 101824.

### **Single-step genomic evaluation of Russian dairy cattle using internal and external information**

Kudinov, A. A., Mäntysaari, E. A., Pitkänen, T. J., Saksa, E. I., Aamand, G. P., Uimari, P. & Strandén, I., maj 2022, I: *Journal of Animal Breeding and Genetics*. 139, 3, s. 259-270 12 s.

### **Effect of genomic selection on genetic variability in chromosomal level in the Finnish Ayrshire**

Sarviaho, K. J., Uimari, P. & Martikainen, K., 2022, *Proceedings of the 12th World Congress on Genetics Applied to Livestock Production (WCGALP)*. Wageningen Academic Publishers, s. 980-983

### **Identification of copy number variations and candidate genes for reproduction traits in Finnish pig populations**

Iso-Touru, T., Uimari, P., Elo, K., Sevón-Aimonen, M-L. & Sironen, A., 2022, I: *Agricultural and Food Science*. 31, 3, s. 149-159 11 s.

**Estimation of social genetic effects on feeding behaviour and production traits in pigs**

Kavlak, A. T., Strandén, E., Lidauer, M. H. & Uimari, P., mars 2021, I: *Animal*. 15, 3, 8 s., 100168.

**Deletion of porcine BOLL is associated with defective acrosomes and subfertility in Yorkshire boars**

Noskova, A., Wurmser, C., Crysanto, D., Sironen, A., Uimari, P., Fries, R., Andersson, M. & Pausch, H., dec. 2020, I: *Animal Genetics*. 51, 6, s. 945-949 5 s.

**Metafounder approach for single-step genomic evaluations of Red Dairy cattle**

Kudinov, A. A., Mantysaari, E. A., Aamand, G. P., Uimari, P. & Strandén, I., juli 2020, I: *Journal of Dairy Science*. 103, 7, s. 6299-6310 12 s.

**Identification of runs of homozygosity affecting female fertility and milk production traits in Finnish Ayrshire cattle**

Martikainen, K., Koivula, M. & Uimari, P., 2 mars 2020, I: *Scientific Reports*. 10, 1, 9 s., 3804.

**Estimation of heritability of feeding behaviour traits and their correlation with production traits in Finnish Yorkshire pigs**

Kavlak, A. T. & Uimari, P., nov. 2019, I: *Journal of Animal Breeding and Genetics*. 136, 6, s. 484-494 11 s.

**Estimation of intrachromosomal inbreeding depression on female fertility using runs of homozygosity in Finnish Ayrshire cattle**

Martikainen, K., Sironen, A. & Uimari, P., dec. 2018, I: *Journal of Dairy Science*. 101, 12, s. 11097-11107 11 s.

**Assessing the genetic differentiation of Holstein cattle herds in the Leningrad region using  $F_{st}$  statistics**

Smaragdov, M. G., Kudinov, A. A. & Uimari, P., 2018, I: *Agricultural and Food Science*. 27, 2, s. 96-101 6 s.

**Developing a genetic evaluation system for milk traits in Russian black and white dairy cattle**

Kudinov, A. A., Juga, J., Mäntysaari, E. A., Strandén, I., Saksa, E. I., Smaragdov, M. G. & Uimari, P., 2018, I: *Agricultural and Food Science*. 27, 2, s. 85-95 11 s.

**The use of runs of homozygosity for intra-chromosomal estimation of inbreeding depression on female fertility in Finnish Ayrshire cattle**

Martikainen, K. & Uimari, P., 2018, I: *Proceedings of the World Congress on Genetics Applied to Livestock Production*. 2018, 423

**Estimation of inbreeding depression on female fertility in the Finnish Ayrshire population**

Martikainen, K., Tyrisevä, A. M., Matilainen, K., Pösö, J. & Uimari, P., okt. 2017, I: *Journal of Animal Breeding and Genetics*. 134, 5, s. 383-392 10 s.

**Genome-wide SNP data unveils the globalization of domesticated pigs**

Yang, B., Cui, L., Perez-Enciso, M., Traspov, A., Crooijmans, R. P. M. A., Zinovieva, N., Schook, L. B., Archibald, A., Gatphayak, K., Knorr, C., Triantafyllidis, A., Alexandri, P., Semiadi, G., Hanotte, O., Dias, D., Dovc, P., Uimari, P., Iacolina, L., Scandura, M., Groenen, M. A. M., & 2 andraHuang, L. & Megens, H-J., 21 sep. 2017, I: *Genetics Selection Evolution*. 49, 15 s., 71.

**Novel harmful recessive haplotypes for reproductive traits in pigs**

Haggman, J. & Uimari, P., apr. 2017, I: *Journal of Animal Breeding and Genetics*. 134, 2, s. 129-135 7 s.

**Whole-genome association analysis of pork meat pH revealed three significant regions and several potential genes in Finnish Yorkshire pigs**

Verardo, L. L., Sevón-Aimonen, M-L., Serenius, T., Hietakangas, V. & Uimari, P., 13 feb. 2017, I: *BMC Genetics*. 18, 15 s., 13.

**Lypsykarjan genomisen valinta**

Juga, J. K., Sillanpää, M. J., Mäntysaari, E. A., Mäki-Tanila, A. V. & Uimari, J. P., 2017, *Maailma muuttuu - muuttuuko maatalous?* Seppänen, M. & Kymäläinen, H-R. (red.). 2 red. Helsinki: Unigrafia, s. 220 - 226 7 s.

### **Upgrading Dairy Cattle Evaluation System in Russian Federation**

Kudinov, A. A., Juga, J. K., Uimari, J. P., Mäntysaari, E. A., Strandén, I. J., Plemyashov, K. V., Saksa, E. I. & Smaragdov, M. G., 2017, I: Interbull Bulletin. 51, s. 67-74 8 s.

### **Heritability of hypothyroidism in the Finnish Hovawart population**

Åhlgren, J. K. & Uimari, J. P., 1 juni 2016, I: Acta Veterinaria Scandinavica. 58, 5 s., 39.

### **A combination of two variants in PRKAG3 is needed for a positive effect on meat quality in pigs**

Uimari, P. & Sironen, A., 28 feb. 2014, I: BMC Genetics. 15, 9 s., 29.

### **Preface**

Uimari, P., 2014, I: Agricultural and Food Science. 23, 1, s. 1 1 s.

### **Reliability of Genomic Selection of Reproduction Traits in Finnish Yorkshire Pig Breed**

Uimari, P., Sevon-Aimonen, M-L. & Serenius, T., 2014, *10th World Congress of Genetics Applied to Livestock Production: Abstracts and Proceedings*. [Vancouver]: World Congress on Genetics Applied to Livestock Production, WCGALP, 3 s.

### **Ectopic *KIT* copy number variation underlies impaired migration of primordial germ cells associated with gonadal hypoplasia in cattle (*Bos taurus*)**

Venhoranta, H., Pausch, H., Wysocki, M., Szczerbal, I., Hänninen, R., Taponen, J., Uimari, P., Flisikowski, K., Lohi, H., Fries, R., Switonski, M. & Andersson, M., 2013, I: PLoS One. 8, 9, 11 s., e75659.

### **Evidence for three highly significant QTL for meat quality traits in the Finnish Yorkshire pig breed.**

Uimari, P., Sironen, A. & Sevon-Aimonen, M-L., 2013, I: Journal of Animal Science. 2013, 91, s. 2001-2011

### **Heritability of sow longevity and lifetime prolificacy in Finnish Yorkshire and Landrace pigs.**

Uimari, P. & Sevon-Aimonen, M-L., 2013, I: Agricultural and Food Science. 22, s. 325-330

### **L1 insertion within *SPEF2* gene is associated with increased litter size in the Finnish Yorkshire population.**

Sironen, A., Uimari, P., Iso-Touru, T. & Vilkki, J., 2012, I: Journal of Animal Breeding and Genetics. 129, s. 92-97

### **Comparison of different DNA extraction methods from hair root follicles to genotype Finnish Landrace boars with the Illumina PorcineSNP60 BeadChip**

Sironen, A., Uimari, P. & Vilkki, J., juni 2011, I: Agricultural and Food Science. 20, 2, s. 143-150 8 s.

### **Extent of linkage disequilibrium and effective population size in Finnish Landrace and Finnish Yorkshire pig breeds**

Uimari, P. & Tapio, M., mars 2011, I: Journal of Animal Science. 89, 3, s. 609-614 6 s.

### **Whole-genome SNP association analysis of reproduction traits in the Finnish Landrace pig breed.**

Uimari, P., Sironen, A. & Sevon-Aimonen, M-L., 2011, I: Genetics Selection Evolution. 43, s. 42

### **Knobbed acrosome defect is associated with a region containing the genes *STK17b* and *HECW2* on porcine chromosome 15**

Sironen, A., Uimari, P., Nagy, S., Paku, S., Andersson, M. & Vilkki, J., 9 dec. 2010, I: BMC Genomics. 11, art. 699, 8 s., 699.

### **Genetic parameters for bone strength, osteochondrosis and meat percentage in Finnish Landrace and Yorkshire pigs**

Storskrubb, A., Sevon-Aimonen, M. -L. & Uimari, P., aug. 2010, I: Animal. 4, 8, s. 1319-1324 6 s.

### **Effect of polymorphisms in candidate genes on reproduction traits in Finnish pig populations**

Sironen, A. I., Uimari, P., Serenius, T., Mote, B., Rothschild, M. & Vilkki, J., mars 2010, I: Journal of Animal Science. 88, 3, s. 821-827 7 s.

**Spermine analogue-regulated expression of spermidine/spermine N1-acetyltransferase and its effects on depletion of intracellular polyamine pools in mouse fetal fibroblasts**

Uimari, A., Keinanen, T. A., Karppinen, A., Woster, P., Uimari, P., Janne, J. & Alhonen, L., 15 aug. 2009, I: *Biochemical Journal*. 422, s. 101-109 9 s.

**Type 2 diabetes whole genome association study in four populations: the DiaGen consortium**

Salonen, J. T., Uimari, P., Aalto, J.-M., Pirskanen, M., Kaikkonen, J., Todorova, B., Hyypponen, J., Korhonen, V.P., Asikainen, J., Devine, C., Tuomainen, T.P., Luedemann, J., Nauck, M., Kerner, W., Stephens, R.H., New, J.P., Ollier, W.E., Gibson, J.M., Payton, A., Horan, M.A., & 8 andraPendleton, N., Mahoney, W., Meyre, D., Deplanque, J., Froguel, P., Luzzatto, O., Yakir, B. & Darvasi, A., sep. 2007, I: *Diabetologia*. 50, s. S40-S40 1 s.

**Genome-wide linkage disequilibrium from 100,000 SNPs in the East Finland founder population**

Uimari, P., Kontkanen, O., Visscher, P.M., Pirskanen, M., Fuentes, R. & Salonen, J.T., juni 2005, I: *Twin Research and Human Genetics*. 8, 3, s. 185-197 13 s.

**A novel mechanism for endothelial dysfunction in pregnancy: role of DDAH1 haplotypes in preeclampsia**

Akbar, F., Heinonen, S., Pirskanen, M., Uimari, P., Tuomainen, T.-P. & Salonen, J.T., 2005, I: *Molecular Human Reproduction*. 11, s. 73-77

**New paraoxonase 1 polymorphism I102V and the risk of prostate cancer in Finnish men**

Marchesani, M., Hakkarainen, A., Tuomainen, T.P., Kaikkonen, J., Pukkala, E., Uimari, P., Seppala, E., Matikainen, M., Kallioniemi, O.P., Schleutker, J., Lehtimäki, T. & Salonen, J.T., 4 juni 2003, I: *Journal of the National Cancer Institute*. 95, 11, s. 812-818 7 s.

**Chromosome 19q13 and multiple sclerosis susceptibility in Finland: a linkage and two-stage association study**

Reunanen, K., Finnila, S., Laaksonen, M., Hiekkalinna, T., Sumelahti, M.L., Wikstrom, J., Pastinen, T., Kuokkanen, S., Saarela, J., Uimari, P., Ruutiainen, J., Ilonen, J., Peltonen, L. & Tienari, P.J., maj 2002, I: *Journal of Neuroimmunology*. 126, 1-2, s. 134-142 9 s., PII S0165-5728(02)00051-6.

**Multiple QTL mapping in related plant populations via a pedigree-analysis approach**

Bink, M.C.A.M., Uimari, P., Sillanpää, M.J., Janss, L.L.G. & Jansen, R.C., apr. 2002, I: *Theoretical and Applied Genetics*. 104, 5, s. 751-762 12 s.

**Mapping of an immotile short tail sperm defect in the Finnish Yorkshire on porcine Chromosome 16**

Sironen, A. I., Andersson, M., Uimari, P. & Vilkki, J., 2002, I: *Mammalian Genome*. 13, s. 45-49 5 s.

**Multiple QTL mapping in related plant populations via a pedigree-analysis approach**

Bink, M. C. A. M., Uimari, P., Sillanpää, M. J., Janss, L. L. G. & Jansen, R. C., 2002, I: *Theoretical and Applied Genetics*. 104, 5, s. 751-762

**Bayesian oligogenic analysis of quantitative and qualitative traits in general pedigrees**

Uimari, P. & Sillanpää, M.J., nov. 2001, I: *Genetic Epidemiology*. 21, 3, s. 224-242 19 s.

**Respiratory distress syndrome: evaluation of genetic susceptibility and protection by transmission disequilibrium test**

Haataja, R., Marttila, R., Uimari, P., Lofgren, J., Ramet, M. & Hallman, M., sep. 2001, I: *Human Genetics*. 109, 3, s. 351-355 5 s.

**Bayesian association mapping for quantitative traits in a mixture of two populations**

Sillanpää, M. J., Kilpikari, R., Ripatti, S., Onkamo, P. & Uimari, P., 2001, I: *Genetic Epidemiology*. 21, Suppl. 1, s. S692-S699

**Bayesian association mapping for quantitative traits in a mixture of two populations**

Sillanpää, M., Kilpikari, R., Ripatti, S., Onkamo, P. & Uimari, P., 2001, I: *Genetic Epidemiology*. 21, s. S692-S699 8 s.

**Bayesian oligogenic analysis of quantitative and qualitative traits in general pedigrees**

Uimari, P. & Sillanpää, M. J., 2001, I: Genetic Epidemiology. 21, 3, s. 224-242

**Candidate gene regions and genetic heterogeneity in gluten sensitivity**

Holopainen, P., K, M., Uimari, P., Collin, P., Mäki, M. & Partanen, J., 2000, I: Gut. 48, 5, s. 696-701 6 s.

**The effect of using different culling regimens on genetic response with two-trait, two-stage selection in a nucleus broiler stock**

Mehrabani-Yeganeh, H., Gibson, JP. & Uimari, P., juli 1999, I: Poultry Science. 78, 7, s. 931-936 6 s.

**A Bayesian MCMC Approach to Map Disease Genes in Simulated GAW11 data**

Uimari, P., Pitkäniemi, J. M. & Onkamo, P., 1999, I: Genetic Epidemiology. 17, Suppl. 1, s. S743-S748 8 s.

**Mapping quantitative trait loci for milk production and health of dairy cattle in a large outbred pedigree**

Zhang, Q., Boichard, D., Hoeschele, I., Ernst, C., Eggen, A., Murkve, B., Pfister-Genskow, M., Witte, LA., Grignola, FE., Uimari, P., Thaller, G. & Bishop, MD., aug. 1998, I: Genetics. 149, 4, s. 1959-1973 15 s.

**The value of crossbreeding information in selection of poultry under a dominance model**

Uimari, P. & Gibson, JP., apr. 1998, I: Animal Science. 66, s. 519-528 10 s.

**Advances in statistical methods to map quantitative trait loci in outbred populations**

Hoeschele, I., Uimari, P., Grignola, FE., Zhang, Q. & Gage, KM., nov. 1997, I: Genetics. 147, 3, s. 1445-1457 13 s.

**Mapping-linked quantitative trait loci using Bayesian analysis and Markov chain Monte Carlo algorithms**

Uimari, P. & Hoeschele, I., juni 1997, I: Genetics. 146, 2, s. 735-743 9 s.

**Sensitivity of segregation analysis to data structure and transformation: A case study of trypanotolerance in mice**

Uimari, P., Kemp, SJ., Dekkers, JCM., Teale, AJ. & Kennedy, BW., apr. 1997, I: Heredity. 78, s. 424-432 9 s.

**The use of multiple markers in a Bayesian method for mapping quantitative trait loci**

Uimari, P., Thaller, G. & Hoeschele, I., aug. 1996, I: Genetics. 143, 4, s. 1831-1842 12 s.

**Power and sensitivity of some simple tests for detection of major genes in outbred populations**

Uimari, P., Kennedy, BW. & Dekkers, JCM., feb. 1996, I: Journal of Animal Breeding and Genetics. 113, 1, s. 17-28 12 s.

**Power and parameter estimation of complex segregation analysis under a finite locus model**

Uimari, P., Kennedy, BW. & Dekkers, JCM., 1996, I: Genetics Selection Evolution. 28, 4, s. 345-358 14 s.

**Relationship between bull dam herd characteristics and bias in estimated breeding value of bull**

Uimari, P. & Mantysaari, EA., 1995, I: Agricultural science in Finland. 4, 5-6, s. 463-472 10 s.

**REPEATABILITY AND BIAS OF ESTIMATED BREEDING VALUES FOR DAIRY BULLS AND BULL DAMS CALCULATED FROM ANIMAL-MODEL EVALUATIONS**

UIMARI, P. & MANTYSAARI, EA., okt. 1993, I: Animal production. 57, s. 175-182 8 s.

**ACCURACY OF GENETIC EVALUATIONS IN DOMINANCE GENETIC MODELS ALLOWING FOR INBREEDING**

Uimari, P. & Mäki-Tanila, A., dec. 1992, I: Journal of Animal Breeding and Genetics. 109, 6, s. 401-407 7 s.

**Aktiviteter**

**Vastaväittäjä Suranaree University**

Pekka Uimari (Handledare)

24 feb. 2023

**Suranaree University of Technology**

Pekka Uimari (Besökande forskare)

15 dec. 2018 → 20 dec. 2018

**Vastaväittäjä Kiinan Maatalousyliopisto**

Pekka Uimari (Handledare)

23 okt. 2018

**Alper Tuna Kaviak PhD thesis supervision**

Pekka Uimari (Handledare)

2018 → ...

**Canadian Journal of Animal Science (Tidskrift)**

Pekka Uimari (Referentgranskare)

2017 → ...

**Vastaväittäjä SLU, Ruotsi**

Pekka Uimari (Opponent)

2 dec. 2016

**Väitöskirjan esitarkastaja, HY**

Pekka Uimari (Förhandsgranskare)

1 aug. 2016 → 15 sep. 2016

**Vastaväittäjä Aarhusin Yliopisto, Tanska**

Pekka Uimari (Opponent)

29 feb. 2016

**Katja Martikainen PhD thesis supervision**

Asko Mäki-Tanila (Handledare) &amp; Jukka Pekka Uimari (Handledare)

2016 → ...

**Vastaväittäjä Wageningenin Yliopisto**

Pekka Uimari (Opponent)

9 dec. 2015

**66th Annual Meeting of the European Federation of Animal Science (EAAP)**

Pekka Uimari (Närvarande)

30 aug. 2015 → 4 sep. 2015

**Faculty of Social Sciences Gender Studies Teaching Basket (Extern organisation)**

Pekka Uimari (Medlem)

maj 2015 → 2016

**Scientific Reports (Tidskrift)**

Pekka Uimari (Medlem i redaktionell ledning)

1 nov. 2014 → ...

**Maa- ja Elintarvitalouden Tutkimuslaitos (Extern organisation)**

Pekka Uimari (Expert)

okt. 2014 → ...

### **10th World Congress on Genetics Applied to Livestock Production**

Pekka Uimari (Närvarande)  
17 aug. 2014 → 22 aug. 2014

### **NOVA Kurssi Advanced quantitative genetics for animal breeding**

Pekka Uimari (Ordförande i organisationskommitté)  
9 juni 2014 → 14 juni 2014

### **Agricultural and Food Science (Tidskrift)**

Pekka Uimari (Chefredaktör)  
1 jan. 2014 → 31 dec. 2017

### **Vastaväittäjä SLU, Ruotsi**

Pekka Uimari (Opponent)  
5 dec. 2013

## **Projekt**

### **SSJS sikagenomiikka 2**

Uimari, P.  
Suomen sianjalostuksen säätiö  
01/06/2023 → 31/12/2025

### **University profiling funding 7 InterEarth RESET**

Ahonen, L., Auvinen, P., Betz-Heinemann, A., Citterico, M., Eronen, J. T., Fuentenebro Alonso, P., Gammal, J., Green, S., Heikinheimo, A., Holopainen, M., Hyytiäinen, K., Karhu, K., Kaukonen, M., Kiljunen, S., Kolari, P., Korpela, K., Lampilahti, J., Lewandowska, A., Lindholm, T. M., Lindroos, M., Lintunen, A., Luomanen, P., Norkko, J., Pietikäinen, J., Raivonen, M., Ruohomäki, A. I., Siven, M., Syrjä, P., Taira, T., Tatti, N., Thomas, D. N., Tiira, T., Toppinen, A., Uimari, P., Vainio, A., Varjosalo, M., Vartiainen, M., Veikkolainen, T., Zaidan, M. A., Airavaara, M., Heiskanen, J., Huiskonen, J., Hyvärinen, M., Kulmala, M., Kulmala, M., Mervaala, E., Mäkelä, J., Primmer, C., Räsänen, A., Sironen, T. & Toivonen, R.  
Finlands Akademi, Suomen Akatemia Projektilaskutus  
01/01/2023 → 31/12/2028