

Jury report

For Women in Science Rising Talent Prizes 2019

L'Oréal Netherlands, the Netherlands Commission for UNESCO and the Royal Holland Society of Sciences and Humanities (KHMW) have joined hands to award national prizes to young female researchers in Life Sciences or Physical Sciences as part of the Netherlands L'Oréal UNESCO For Women In Science programme. For this first edition of the For Women In Science Rising Talent Prize we received no fewer than 79 nominations, all of excellent quality. The nominations cover a great variety of topics and originate from nearly all Dutch universities, and several research institutes and hospitals. The large number and high quality of the nominations made the work of the jury a difficult one. It was therefore decided to grant three prizes and two honorable mentions to do justice to the quality of the many nominations.

First Prize: Jorinde van de Vis, Nikhef, Theory Group

The first prize is for Jorinde van de Vis who is an exceptional scientific talent. While she only recently defended her PhD thesis "Higgs dynamics in the early universe", she is co-author of seven (!) papers in high impact journals. Having obtained her masters degree at Leiden University with honours, Jorinde performed her PhD research in theoretical physics at Nikhef, the national institute for particle and astro-particle physics in Amsterdam.

Jorinde's research focuses on the dynamics of the Higgs particle in the early universe. There are two main questions that ultimately drive her research at the interface of particle physics and cosmology:

What theory describes all elementary particles and their interactions? There is experimental evidence that the Standard Model is not a complete description of particle physics. How should this model be extended?

What happened in the early universe? Some important questions about the history and evolution of our universe are yet unanswered.

In her extremely original work Jorinde has (here I quote a referee) shown an exceptional talent for mathematical modeling. Through Jorinde's work new insights were obtained and new research directions identified. In addition to the seven publications in top international journals, Jorinde has been invited to speak about her research in many famous places around the world.

Other tokens of Jorinde's talent are the many prizes she received over the years. From the KNAW Education award at secondary school to a prize from the Casimir research school during her masters. Jorinde has also been an active participant of the academic community, among others as a member in the educational committee and later in the PhD council. In addition, she performed several outreach activities. Her master's thesis supervisor specifically mentioned her excellent talks and presentations at meetings.

In September Jorinde has started a Postdoc position at the theoretical physics department of the German national accelerator laboratory DESY in Hamburg. We are sure to hear more from her in the future!

Second Prize: Sandrine Gallois, Leiden University, Faculty of Archeology

The work of Sandrine Gallois is highly original and multi-faceted. While modern technology is increasingly being exploited to feed us, and hi-tech solutions are indispensable to doing so durably, Sandrine has gone back to the very roots of food production, to the transformation of hunter-gatherers into farmers.

While living in Cameroon among the Baka, who rely on their immediate environment for 'sustainable livelihood', Sandrine closely observed their ways, to learn how they adapt to a 'changing social and environmental context'. Her observations are important for policy makers, and for academics interested in traditional knowledge, but also in the larger picture of small-scale societies and biocultural diversity.

She is not only interested to learn from the Baka, but also keen to let the Baka benefit from her findings. By living among them, and gaining their trust, she has been able to collect data important for helping them preserve their way of life and to guarantee their human rights.

Her dedication to her research, and her commitment to the Baka, wanting them to benefit as much as 'western science' from her work, has impressed the jury. It is hoped that this prize will help her to achieve her wish, to report back to the local community and to present a catalogue of the plants that are of daily importance to them.

Third Prize: Stefany Moreno Gamez, University of Groningen, Faculty of Science and Engineering

The third prize in the For Women in Science Rising Talent Awards goes to Stefany Moreno-Gamez. She is an outstanding talent, had completed two bachelor studies at age 19 back home in Bogota, Columbia, continued her studies at Harvard University and the Santa Fe Institute, before she won a prestigious Erasmus Mundus fellowship to continue her master studies at Harvard and the State University of Groningen.

Not surprisingly she decided to continue her research as a PhD student to study the causes and consequences of bacterial diversity. By a combination of meticulous lab experiments and mathematical modelling, she achieved exciting and thought-provoking insights. For example, for bacteria it may be better to retard growth after a period of starvation, a phenomenon that is usually viewed as maladaptive. In another line of research, she challenges the standard view that bacterial 'quorum sensing' is a way to make decisions dependent on population density. Instead, Stefany showed that quorum sensing can be a 'wisdom of the crowd' mechanism. Bacteria make better decisions when taking into consideration how other population members judge the current situation.

Stefany will defend her PhD in a few days from now. The jury of the Rising Talent Awards can only be very happy that just before that day we bestow on her the well-deserved recognition of her many talents that we celebrate today.

Honorable mention: Eline van Haaften, Eindhoven University of Technology, Faculty of Biomedical Engineering

It is our pleasure to choose Eline van Haaften for the 'honorable mention' category. Eline has worked on the interface between science and technology and life sciences. She has started with her PhD in 2015, at Eindhoven University of Technology. In this research she focussed on the development of vascular tissue. This project is highly relevant for the medical sciences where there is need for the development of vascular substitutes.

Eline has an impressive track record and worked already on several institutes, among others in Zurich. She already has 5 publication in which she is first author, and other publications that she co-authored. In view of the current discussion on the importance of humanities, we also like to mention that Eline also has a certificate in Philosophy, and this is what we see moreover in talented and very enthusiastic students: they reach outside the boundaries of their study, and if possible at their university, they also follow other courses.

Eline has already been awarded with several prizes. In Bordeaux she received the young investigator award, in Lunteren she was awarded with the best oral presentation and in Eindhoven she received a final project award.

We are happy that Eline is now taken up in our list of outstanding and much promising researchers in the context of the L'Oréal for Women in Science Rising Talent Prizes of 2019.

Honorable mention: Ivana Abramovic, Eindhoven University of Technology, Faculty of Applied Physics

Ivana Abramovic was born in Serbia and trained at the University of Belgrade and Eindhoven University of Technology.

Her field of interest is nuclear fusion - the reaction powering the stars - as a sustainable, clean and inexhaustible potential energy source. To achieve it in terrestrial conditions the fuel - a gas mixture of hydrogen isotopes - needs to be heated to extreme temperatures of 150 million degrees Celsius. Such hot gas cannot touch any material and for this reason a state of the art magnetic cage is used to keep it in place (a stellarator device Wendelstein 7-X).

Her research deals with the development of theory and computational tools enabling the modelling and analysis of a physical process called CTS, Collective Thomson Scattering, in high temperature nuclear fusion plasma of Wendelstein 7-X. The described research stands at the cutting edge of fusion plasma diagnostics, data science and machine learning.

It may contribute to the development of magnetic confinement nuclear fusion, which may potentially provide an answer to the world's energy crisis. The societal and economic impact of such a paradigm shift in energy source goes without saying. In addition to fusion,

technological applications and relevance of the methodology developed relate for example to: (1) optimization of the performance of space plasma propulsion engines or (2) optimization of extreme ultraviolet lithography, considered the most promising technology in semiconductor industry.

With her work the future may start now.

Prof. dr. P.R. (Dop) Bär, oud-directeur masteropleiding Biomedical Sciences, em. hoogleraar experimentele neurologie en biomedische wetenschappen UMC Utrecht

Prof. dr. ir. drs. H. (Hester) Bijl, vice-rector magnificus en lid raad van bestuur Universiteit Leiden

Prof. dr. R.A.J.O. (Rudi) Dierckx, hoogleraar nucleaire geneeskunde en voorzitter Medisch Beeldvormingscentrum UMC Groningen

Prof. dr. H.W.M. (Hanneke) van Laarhoven, hoogleraar translationele medische oncologie, i.h.b. gastro-intestinale oncologie AMC/Universiteit van Amsterdam

Prof. dr. J.H. (Joke) Meijer, hoogleraar neurofysiologie en 24-uurs ritmen LUMC en Visiting Professor Oxford University