CVN CURRÍCULUM VÍTAE NORMALIZADO

Maira Aguiar
Generated from: Editor CVN de FECYT
Date of document: 19/09/2020
v 1.4.3
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Summary of CV

This section describes briefly a summary of your career in science, academic and research; the main scientific and technological achievements and goals in your line of research in the medium -and long- term. It also includes other important aspects or peculiarities.

With emphasis on mathematical modelling of biological systems, I hold a double PhD degree in Population Biology (by Lisbon University, Portugal) and Life Sciences (by VU Amsterdam, The Netherlands). Although I have quite some experience in laboratory and field epidemiology, I have been working in Applied Mathematics in the last 10 years, always based in mathematics departments. I joined the Center for Mathematics and Fundamental Applications (CMAF) in Lisbon University in 2007 under a Marie Curie Excellence Grant hosted by the Gulbenkian Institute of Science. And in 2008 I started performing my PhD Project "Rich dynamics in multi-strain models: non-linear dynamics and deterministic chaos in dengue fever epidemiology", under FCT financial support, obtaining a double PhD degree in 2012, with an excellent evaluation.

I am currently based at the Laboratory of Mathematical and Computational Biology, Department of Mathematics at University of Trento, Italy, where I hold a full time research position financed by Marie Skłodowska-Curie actions - European Commission. From August 2020 on I will be based at the Center of Applied Mathematics (BCAM), Bilbao, Spain, where I lead the research lime "Mathematical and Theoretical Biology". I am highly trained in nonlinear dynamics, bifurcation analysis and biostatistics, and my scientific interests address significant mathematical problems and fundamental questions in public health, which require a highly multidisciplinary approach. My research crosses the different epidemiological areas of infectious diseases, with special focus on the study of vector-borne diseases and its dynamics, by developing mathematical models which can be used by public health authorities as a tool to understand and predict the transmission of diseases and develop and evaluate the introduction of intervention strategies including vector control and vaccination, with eventual industry collaboration.

In the past 5 years I published more than 35 scientific papers, and have several publications as book chapters and refereed conference proceedings. I have gained international status and recognition from my peers, which translated into scientific collaborations, frequent plenary and invited talks and courses at scientific meetings and Universities of several countries. With a large experience in scientific meetings' organization, I have organized and celebrated, for the past ten years, the Workshop DSABNS with wide national and international participation. I was the leading organizer, co-Chair and a member of the Scientific Committee of the 11th European Conference on Mathematical and Theoretical Biology (ECMTB 2018 – www.ecmtb2018.org), a joint venture of the European Society for Mathematical and Theoretical Biology and the European Mathematical Society and a main event of the Year of Mathematical Biology 2018, counting with more than 700 participants coming from 80 countries around the globe.

With many Institutional responsibilities, I was just elected as a Vice-President and Board Member of the European Society of Mathematical and Theoretical Biology, which serves as further evidence of the highest esteem I hold in the European mathematical biology scientific community.

Maira Aguiar

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Current professional situation

Employing entity: ASOC BCAM - BASQUE CENTER FOR APPLIED MATHEMATICS
Professional category: Ikerbasque Fellow
Start date: 01/09/2019
Performed tasks: I am under leave of absence till the Marie Curie project ends.

Employing entity: University of Trento   **Type of entity:** University
Professional category: Marie Curie Fellow
Start date: 01/01/2019
Type of contract: Temporary employment contract

Previous positions and activities

	Employing entity	Professional category	Start date
1	European Centre for Disease Prevention and Control	EPIET Fellow	12/09/2018
2	Universidade Nova de Lisboa	Post doctoral researcher	01/01/2017
3	University of Lisbon	Post doctoral researcher	23/04/2012

1 **Employing entity:** European Centre for Disease Prevention and Control
Professional category: EPIET Fellow
Start-End date: 12/09/2018 - 31/12/2018

2 **Employing entity:** Universidade Nova de Lisboa **Type of entity:** University
Professional category: Post doctoral researcher
Start-End date: 01/01/2017 - 31/08/2018   **Duration:** 1 year - 9 months

3 **Employing entity:** University of Lisbon
Professional category: Post doctoral researcher
Start-End date: 23/04/2012 - 31/12/2016

Education

University education

1st and 2nd cycle studies and pre-Bologna degrees

University degree: Higher degree
Name of qualification: Biology - Bachelor, licensed to teach
Degree awarding entity: Pontifícia Universidade   **Type of entity:** University
Católida de Minas Gerais, Brazil
Date of qualification: 2004

Doctorates

1   **Doctorate programme:** PhD in Biology
Degree awarding entity: University of Lisbon   **Type of entity:** University
Date of degree: 23/04/2012

2   **Doctorate programme:** PhD in Life Sciences
Degree awarding entity: Vrije Universiteit   **Type of entity:** University
Amsterdam
Date of degree: 23/04/2012

Language skills

Language	Listening skills	Reading skills	Spoken interaction	Speaking skills	Writing skills
Italian	B2	B2	B2	B2	B2
Spanish	B2	B2	B2	B2	B2
English	C2	C2	C2	C2	C2
Portuguese	C2	C2	C2	C2	C2

Scientific and technological experience

Scientific or technological activities

R&D projects funded through competitive calls of public or private entities

1 **Name of the project:** Mathematical models for COVID-19 epidemiology: assessing risks and control measures
Entity where project took place: ASOC BCAM - BASQUE CENTER FOR APPLIED MATHEMATICS
Start-End date: 2020 - 2021

2 **Name of the project:** On the Origin of Complex Dynamics in Multi-strain Models: Insights for Public Health Intervention Measures (COMPLEXDYNAMICS-PHIM)
Entity where project took place: University of Trento
City of entity: Trento, Provincia Autonoma Trento, Italy
Start-End date: 2019 - 2021

3 **Name of the project:** European Network of Vaccine Adjuvants (COST Actions)
Entity where project took place: Universidade Nova **Type of entity:** University
de Lisboa
Start-End date: 2017 - 2021

4 **Name of the project:** MULTIscale modeling with applications in QUANTitative bioscience (MULTIQUANT)
Entity where project took place: ASOC BCAM - BASQUE CENTER FOR APPLIED MATHEMATICS
Start-End date: 2019 - 01/09/2020

5 **Name of the project:** Dengue Research Framework for Resisting Epidemics in Europe (DENFREE)
Entity where project took place: University of   **Type of entity:** University
Lisbon
City of entity: Lisbon, Lisboa, Portugal
Start-End date: 2012 - 2016

6 **Name of the project:** Dynamics and Applications
Entity where project took place: University of Porto **Type of entity:** University
City of entity: Porto, Norte, Portugal
Start-End date: 2012 - 2015

7 **Name of the project:** Dynamics of epidemiological spreading
Entity where project took place: Lisbon University   **Type of entity:** University
City of entity: Lisbon, Lisboa, Portugal
Start-End date: 2010 - 2013

8 **Name of the project:** Rich dynamics in multi-strain models: non-linear dynamics and deterministic chaos in dengue fever epidemiology (PhD Project)
Entity where project took place: University of   **Type of entity:** University
Lisbon
City of entity: Lisbon, Lisboa, Portugal

Funding entity or bodies:
Fundação para a Ciência e a Tecnologia (FCT)

Start-End date: 2008 - 2012

R&D non-competitive contracts, agreements or projects with public or private entities

1 **Name of the project:** Reinfection Threshold and the Management of Recurrent Infections
Degree of contribution: Researcher
Funding entity or bodies:
CENTRO DE ACUSTICA APLICADA Y **Type of entity:** Associations and Groups
EVALUACION NO DESTRUCTIVA

European Commission in the framework Marie Curie Excellence Grants

Start date: 2006 **Duration:** 2 years

2 **Name of the project:** Standardizing the pure IgM diagnostic test of dengue fever
Degree of contribution: Coordinator of total project, network or consortium
Funding entity or bodies:
Fundação Ezequiel Dias **Type of entity:** Administrative Body of the National
Health System

Start date: 2004 **Duration:** 2 years

3 **Name of the project:** Comparative Evaluation of Four Dengue Immunodiagnosis Kits, Using Capture of IgM
Antibodies Methodology (Undergraduate Project)
Degree of contribution: Coordinator of total project, network or consortium
Funding entity or bodies:
Fundação Ezequiel Dias **Type of entity:** Administrative Body of the National
Health System

City funding entity: Brazil

Start date: 2003 **Duration:** 1 year

Scientific and technological activities

Scientific production

Publications, scientific and technical documents

1 Conditional mortality risk can explain differences in COVID-19 case fatality ratios around the globe. Public Health. 2020.
Type of production: Scientific paper　　　　**Format:** Journal
Corresponding author: Yes

2 Ethics of a partially effective dengue vaccine: Lessons from the Philippines. Vaccine. 2020.
Type of production: Scientific paper　　　　**Format:** Journal

3 Modeling COVID 19 in the Basque Country: from introduction to control measure response. Nature Scientific Reports. 2020.
Type of production: Scientific paper　　　　**Format:** Journal
Corresponding author: Yes

4 Reproduction ratio and growth rates: Measures for an unfolding pandemic. PLoS One. 2020.
Type of production: Scientific paper　　　　**Format:** Journal

5 SHAR and effective SIR models: from dengue fever toy models to a COVID-19 fully parametrized SHARUCD framework. Communication in Biomathematical Sciences. 3, pp. 60 - 89. 2020.
Type of production: Scientific paper　　　　**Format:** Journal
Corresponding author: Yes

6 On the role of vector modeling in a minimalistic epidemic model. Mathematical Biosciences and Engineering. 16 - 5, pp. 4314 - 4338. 2019.
Type of production: Scientific paper　　　　**Format:** Journal

7 Dengue vaccination: a more ethical approach is needed. The Lancet. 391 - 10132, pp. 1769 - 1770. 2018.
Type of production: Scientific paper

8 Superdiffusion and epidemiological spreading. Ecological Complexity. 36, pp. 168 - 183. 2018.
Type of production: Scientific paper　　　　**Format:** Journal

9 Consider stopping dengvaxia administration without immunological screening. Expert Review of Vaccines. 16 - 4, pp. 301 - 302. 2017.
Type of production: Scientific paper　　　　**Format:** Journal

10 Dengvaxia Efficacy Dependency on Serostatus: A Closer Look at More Recent Data. Clinical Infectious Diseases. 66 - 4, pp. 641 - 642. 2017.
Type of production: Scientific paper　　　　**Format:** Journal

11 Dengvaxia: age as surrogate for serostatus. The Lancet Infectious Diseases. 18 - 3, pp. 245. 2017.
Type of production: Scientific paper **Format:** Journal

12 Hopf and torus bifurcations, torus destruction and chaos in population biology. Ecological Complexity. 30, pp. 91 - 99. 2017.
Type of production: Scientific paper **Format:** Journal

13 Mathematical models of dengue fever epidemiology: multi-strain dynamics, immunological aspects associated to disease severity and vaccines. Communication in Biomathematical Sciences. 1 - 1, pp. 1 - 12. 2017.
Type of production: Scientific paper **Format:** Journal

14 The practice of prediction: What can ecologists learn from applied, ecology-related fields?. Ecological Complexity. 32, pp. 156 - 167. 2017.
Type of production: Scientific paper **Format:** Journal

15 Dengue vaccine and the 2016 Olympics. The Lancet. 388, pp. 237 - 238. 2016.
Type of production: Scientific paper **Format:** Journal

16 Dengue vaccines: Are they safe for travelers?. Travel Medicine and Infectious Disease. 4, pp. 378 - 383. 2016.
Type of production: Scientific paper **Format:** Journal

17 Epidemiological models in semiclassical approximation: an analytically solvable model as a test case. Mathematical Methods in Applied Sciences. 39, pp. 4914 - 4922. 2016.
Type of production: Scientific paper **Format:** Journal

18 Is discussion of dengue vaccination for the 2016 Olympics necessary?: Authors' reply. The Lancet. 388, pp. 1881 - 1882. 2016.
Type of production: Scientific paper **Format:** Journal

19 Semiclassical approximations of stochastic epidemiological processes towards parameter estimation using as prime example the SIS system with import. Ecological Complexity. 27, pp. 63 - 73. 2016.
Type of production: Scientific paper **Format:** Journal

20 The Impact of the Newly Licensed Dengue Vaccine in Endemic Countries. PLoS Neglected Tropical Diseases. 10 - 12, pp. e0005179. 2016.
Type of production: Scientific paper **Format:** Journal

21 The risks behind Dengvaxia recommendation. The Lancet Infectious Diseases. 16, pp. 882 - 883. 2016.
Type of production: Scientific paper **Format:** Journal

22 Understanding dengue fever dynamics: a study of seasonality in vector-borne disease models. International Journal of Computer Mathematics. 9 - 8, pp. 1405 - 1422. 2016.
Type of production: Scientific paper **Format:** Journal

23 Carnival or football, is there a real risk for acquiring dengue fever in Brazil during holidays seasons?. Nature Scientific Reports. 5 - 8462, 2015.
Type of production: Scientific paper **Format:** Journal

24 Dengue transmission during the 2014 FIFA World Cup in Brazil.The Lancet Infectious Diseases. 10, pp. 765 - 766. 2015.
Type of production: Scientific paper   **Format:** Journal

25 Prediction and Predictability in Population Biology: Noise and Chaos. Mathematical Modelling of Natural Phenomena. 10, pp. 141 - 164. 2015.
Type of production: Scientific paper   **Format:** Journal

26 Scaling up complexity in host–pathogens interaction models. Physics of Life Reviews. 15, pp. 41 - 42.. 2015.
Type of production: Scientific paper   **Format:** Journal

27 Analysis of an asymmetric two-strain dengue model. Mathematical Biosciences. 248, pp. 128 - 139. 2014.
Type of production: Scientific paper   **Format:** Journal

28 Are we modelling the correct dataset? Minimizing false predictions for dengue fever in Thailand. Epidemiology and Infection. 142, pp. 2447 - 2459. 2014.
Type of production: Scientific paper   **Format:** Journal

29 Bifurcation analysis of a family of multi-strain epidemiology models. Journal of Computational and Applied Mathematics. 252, pp. 148 - 158. 2013.
Type of production: Scientific paper   **Format:** Journal

30 How much complexity is needed to describe the fluctuations observed in dengue hemorrhagic fever incidence data?. Ecological Complexity. 16, pp. 31 - 40.. 2013.
Type of production: Scientific paper   **Format:** Journal

31 Time-scale separation and centre manifold analysis describing vector-borne disease dynamics. International Journal of Computer Mathematics. 90, pp. 2105 - 2125. 2013.
Type of production: Scientific paper   **Format:** Journal

32 Dynamic noise, chaos and parameter estimation in population biology. Interface Focus. 2, pp. 156 - 169. 2012.
Type of production: Scientific paper   **Format:** Journal

33 Scaling of stochasticity in dengue hemorrhagic fever epidemics. Mathematical Modelling of Natural Phenomena. 7, pp. 1 - 11. 2012.
Type of production: Scientific paper   **Format:** Journal

34 On the series expansion of the spatial SIS evolution operator. Journal of Difference Equations and Applications. 17, pp. 1107 - 1118. 2011.
Type of production: Scientific paper   **Format:** Journal

35 The effect of global warming on vector-borne diseases. Physics of Life Reviews,. 8, pp. 202 - 203. 2011.
Type of production: Scientific paper   **Format:** Journal

36 The role of seasonality and import in a minimalistic multi-strain dengue model capturing differences between primary and secondary infections: Complex dynamics and its implications for data analysis. Journal of Theoretical Biology. 289, pp. 181 - 196. 2011.
Type of production: Scientific paper

37 A spatially stochastic epidemic model with partial immunization shows in mean field approximation the reinfection threshold. Journal of Biological Dynamics. 4, pp. 634 - 649. 2010.
Type of production: Scientific paper   **Format:** Journal

38 Dynamics of Epidemiological Models. Acta Biotheoretica. 58, pp. 381 - 389.. 2010.
Type of production: Scientific paper   **Format:** Journal

39 Torus bifurcations, isolas and chaotic attractors in a simple dengue fever model with ADE and temporary cross immunity. International Journal of Computer Mathematics. 86, pp. 1867 - 1877. 2009.
Type of production: Scientific paper   **Format:** Journal

40 Epidemiology of dengue fever: A model with temporary cross-immunity and possible secondary infection shows bifurcations and chaotic behaviour in wide parameter regions. Mathematical Modelling of Natural Phenomena. 4, pp. 48 - 70. 2008.
Type of production: Scientific paper   **Format:** Journal

41 Scale-free network of a dengue epidemic. Applied Mathematics and Computation. 195, pp. 376 - 381. 2008.
Type of production: Scientific paper   **Format:** Journal

42 Preface special issue "dynamics in bio-systems" (DSABNS 2016). Ecological Complexity. 30, pp. 1. 2017.
Type of production: Scientific-technical report   **Format:** Journal

R&D management and participation in scientific committees

Scientific, technical and/or assessment committees

Committee title: COVID-19 Basque Modeling Task Force
Affiliation entity: ASOC BCAM - BASQUE CENTER FOR APPLIED MATHEMATICS
Start date: 03/2020

Organization of R&D activities

1 **Title of the activity:** International Conference on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: International Conference
City convening entity: Italy
Start date: 2020   **Duration:** 4 days

2 **Title of the activity:** International Conference on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: International Conference
City convening entity: Italy
Start date: 2019   **Duration:** 4 days

3 **Title of the activity:** European Conference of Mathematics and Theoretical Biology
Type of activity: International Conference
City convening entity: Portugal
Start date: 2018   **Duration:** 5 days

4 **Title of the activity:** International Workshop on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: Workshop
City convening entity: Italy
Start date: 2018   **Duration:** 3 days

5 **Title of the activity:** International Workshop on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: Workshop
City convening entity: Portugal
Start date: 2017   **Duration:** 3 days

6 **Title of the activity:** International Workshop on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: Workshop
City convening entity: Portugal
Start date: 2016   **Duration:** 3 days

7 **Title of the activity:** International Workshop on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: Workshop
City convening entity: Portugal
Start date: 2015   **Duration:** 3 days

8 **Title of the activity:** International Workshop on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: Workshop
City convening entity: Portugal
Start date: 2014   **Duration:** 3 days

9 **Title of the activity:** International Workshop on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: Workshop
City convening entity: Portugal
Start date: 2013   **Duration:** 3 days

10 **Title of the activity:** International Workshop on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: Workshop
City convening entity: Portugal
Start date: 2012   **Duration:** 3 days

11 **Title of the activity:** International Workshop on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: Workshop
City convening entity: Portugal
Start date: 2011   **Duration:** 3 days

12 **Title of the activity:** International Workshop on Dynamical Systems Applied to Biology and Natural Sciences
Type of activity: Workshop

City convening entity: Portugal
Start date: 2010   **Duration:** 3 days