

BIOGRAPHICAL SKETCH

NAME: Raquel Seruca

POSITION TITLE: Group leader at i3S and Vice-president of Ipatimup

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
Faculty of Medicine, Porto, Portugal	M.D.	1986	Medicine
Faculty of Medicine Porto, Porto, Portugal	Ph.D.	1995	Medicine
Institute of Molecular Pathology and Immunology of the University of Porto - IPATIMUP/University of Groningen, Holland	Post-doctoral training	2000	Oncobiology

Present position

2015-Present: Scientific Coordinator of the Cancer Integrated Program at i3S, Porto, Portugal

2015-Present: Group Leader of i3S/Ipatimup, Porto, Portugal

2010-Present: Vice-President of IPATIMUP (function: scientific director)

2006-Present: Affiliated Professor, Medical Faculty of Porto, Portugal

1999-Present: Member of the International Gastric Cancer Linkage Consortium.

Scientific area and activity

Oncobiology, Cancer, cancer invasion, Cell-cell and cell-matrix interactions

SCIENTIFIC PRODUCTION- description:

Raquel Seruca (RS) has demonstrated the importance of diverse oncogenes and tumour suppressor genes in the progression of gastric cancer and identified, for the first time, microsatellite instability (MSI) and mismatch repair (MMR) alterations as a particular molecular subtype of gastric cancer. **RS** defined the frequency of MSI tumours and verified the clinico-pathological relevance of this molecular phenotype in gastric cancer and their impact as prognostic markers. In this line of research, **RS** developed new screening tests for MSI gastrointestinal tumours, currently used in routine labs, and identified BRAFV600E as an excluding marker of HNPCC.

Additionally, **RS** was involved in determining the frequency and type of CDH1 germline alterations in early-onset and familial diffuse gastric cancer. **RS** established in silico and in vitro functional assays to assess the pathogenic role of all CDH1 germline missense mutations detected worldwide and showed its added value in genetic counselling.

Concerning fundamental research on oncobiology, **RS** is interested on the molecular mechanisms regulating cancer cell invasion and metastization. In this topic, she has been devoted to unravel how cell-cell adhesion and cell-matrix interactions regulate cancer cell progression and invasion contributing to poor prognosis. **RS** research group established cell lines carrying cancer causing mutations of cell-cell adhesion molecules aiming at identifying signaling pathways associated to loss of cell-cell adhesion, increase cell-matrix interaction and motility, invasion and cell survival.

SCIENTIFIC PRODUCTION- in numbers:

Raquel Seruca has about 239 publications in international peer-review journals, an h-index of 57. RS has publications in TOP journals of her research area: Gastroenterology, Human Molecular Genetics, Oncogene, Gut, European Journal of Human Genetics, Journal of Clinical Oncology, Lancet Oncology.

Links for Raquel Seruca:

<https://www.ncbi.nlm.nih.gov/pubmed/?term=seruca+r>
<http://www.researcherid.com/rid/F-8187-2011>

Scopus Author ID: 7006207833

Publications

List of 5 selected publications in the last 5 years related to E-cadherin related research, a key area in RS scientific carrier:

Melo S, Figueiredo J, Fernandes MS, Gonçalves M, Morais-de-Sá E, Sanches JM, Seruca R. Predicting the Functional Impact of CDH1 Missense Mutations in Hereditary Diffuse Gastric Cancer. *Int J Mol Sci*. 2017 Dec 12;18(12). pii: E2687. doi: 10.3390/ijms18122687.

- In this paper, we describe the pipeline of assays currently used in the clinics and developed by our group to stratify sequence variants of E-cadherin using in silico, in vitro and in vivo experimental models.

Ribeiro AS, Carvalho FA, Figueiredo J, Carvalho R, Mestre T, Monteiro J, Guedes AF, Fonseca M, Sanches J, Seruca R, Santos NC, Paredes J. Atomic force microscopy and graph analysis to study the P-cadherin/SFK mechanotransduction signalling in breast cancer cells. *Nanoscale*. 2016 Nov 24;8(46):19390-19401.

- In this paper we compare and validate a goldstandard and a novel bioimaging approach to study cell-cell interactions in vitro.

Oliveira C, Pinheiro H, Figueiredo J, Seruca R, Carneiro F. Familial gastric cancer: genetic susceptibility, pathology, and implications for management. *Lancet Oncol*. 2015 Feb;16(2):e60-70. doi: 10.1016/S1470-2045(14)71016-2.

- In this paper we describe the genetics and pathology of hereditary diffuse gastric cancer

Caldeira J, Figueiredo J, Brás-Pereira C, Carneiro P, Moreira AM, Pinto MT, Relvas JB, Carneiro F, Barbosa M, Casares F, Janody F, Seruca R. E-cadherin-defective gastric cancer cells depend on Laminin to survive and invade. *Hum Mol Genet*. 2015 Oct 15;24(20):5891-900. doi: 10.1093/hmg/ddv312.

- In this paper we demonstrate that the ECM component Laminin plays a vital role for cancer survival and invasion in the context of E-cadherin mutant cells

Sanches JM, Figueiredo J, Fonseca M, Durães C, Melo S, Esménio S, Seruca R. Quantification of mutant E-cadherin using bioimaging analysis of in situ fluorescence microscopy. A new approach to CDH1 missense variants. *Eur J Hum Genet*. 2014 Nov 12. doi: 10.1038/ejhg.2014.240.

- In this paper we describe a new bioimaging tool to identify functional relevant E-cadherin germline mutants

Projects

As Principal investigator (PI) of research projects, RS is able to raise competitive funding from FCT, NHI and Europe.

Ongoing: Principal Investigator at i3S/lpatimup

01/2016 to date

Project: "Sensing dysfunctional E-cadherin cells in gastric epithelia (SENSE)", funded by FCT (PTDC/BIM-ONC/0281/2014).

Project: Tracing gastric cancer using quantitative bioimaging analysis (TRACE), funded by FCT (PTDC/BBB-IMG/0283/2014).

Starting in January 2019

Project: Mechano-dependent capture of Circulating Tumour Cells: a cell-ECM based approach coupled with cancer specific glycomarkers (CAPTURE), funded by FEDER-POCI and FCT (POCI-01-0145-FEDER-30383)

Other activities

Evaluator of PhD and post-Doc grants for FCT.

International Evaluator of European projects within the FP7 and Marie Curie grants within the FP7

Evaluator for EU INDIGO projects in the area of biomarker discovery

Member of the steering committee of the “International Gastric Cancer Linkage Consortium.

Member of the external scientific committee of the Institute of Predictive and Personalized Medicine of Cancer (IMPPC), Barcelona, Spain

Supervision and training

RS is the group leader of the epithelial interactions in Cancer at i3S/ IPATIMUP. RS has been able to create a truly multidisciplinary and stimulating environment in which oncologists, pathologists, geneticists, cell biologists, experimental biologists, biochemists, surgeons, and bioengineers work in close collaboration.

RS is involved in 2 post-graduate courses at i3S/IPATIMUP.

Raquel Seruca has been the Supervisor of 10 PhD students that have already completed their PhD programme and already have their Doctoral degree.

Now, RS is the supervisor of 2 PhD students and 5 post-Docs.

Prizes

In 2009, RSeruca received the distinction Ordem do Infante D. Henrique from the Portuguese Presidency (Presidência da República) for her Scientific merit.

In 2014, she got the gold Medal of the Porto City for her contribution for Science Internationalization.