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**Education:**

- 1999-2004** **Ph.D.**, in life sciences from **National Institute of Immunology** (Jawaharlal Nehru University), New Delhi, India.  
Thesis entitled “Role of *Salmonella* secretory protein SopE in the intracellular trafficking of *Salmonella* in Macrophages”.
- 1997-1999** **M.Sc.**, in Biotechnology from **Pondicherry University**, Pondicherry, India.  
Thesis titled “Purification and characterization of Taq DNA polymerase”
- 1994-1997** **B.Sc.**, in Zoology with special emphasis on Biotechnology from **Loyola College**, Chennai, India.  
Thesis titled “*In vitro* propagation of *Hybanthus enneaspermus*”

**Employment:**

- 2020-** **Group Leader**, Institute of Biochemistry and Cell Biology, National Research Council, Naples, Italy
- 2020-** **Head**, Microscopy facility, Institute of Biochemistry and Cell Biology, National Research Council, Naples, Italy.
- 2019-2020** **Group Leader**, Institute of Protein Biochemistry, National Research Council, Naples, Italy
- 2019-2020** **Head**, Microscopy facility, Institute of Protein Biochemistry, National Research Council, Naples, Italy.
- 2014-2019** **Senior Researcher**, Institute of Protein Biochemistry, National Research Council, Naples, Italy
- 2014-2019** **Head**, Microscopy facility, Institute of Protein Biochemistry, National Research Council, Naples, Italy.
- 2012-2014** **Researcher**, Institute of Protein Biochemistry, National Research Council, Naples, Italy.
- 2009-2012** **Post-doctoral fellow**, Telethon Institute of Genetics and Medicine, Naples, Italy.
- 2005-2009** **Post-doctoral fellow**, Mario Negrisud Institute, S.Maria Imbaro, Italy.

**Teaching experience:**

- 2017** PhD coursework lectures, University of Siena, Italy on *Functional cell morphology*
- 2014-** Annual teaching and practical courses on microscopy to graduate students. Institute of Protein Biochemistry, CNR, Naples, Italy.
- 2014** Part of the team providing PhD coursework lectures, CNR, Naples, Italy.

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- 2018** Lecture on “Fluorescence” to students of the University Luigi Vanvitelli
- 2018** Lecture on “History and future of research on membrane trafficking” to the students on the graduate program of the University Luigi Vanvitelli
- 2019** Lecture on “Advance Imaging methods”, Sastra University, India.
- 2019** Lecture on Functional architecture of the Golgi, Sastra University, India:

### Technical expertise:

- 2014- Biochemical techniques to study lipids and glycosylation, CRISPR/Cas9 mediated gene KO  
Super resolution microscopy (G-STED), Electron microscopy (tomography, cryo immunogold labeling), spinning disc confocal microscopy, High throughput imaging.
- 2009-2014 Bioinformatic methods to analyze transcriptional profiles, protein-protein interactions and co-expression analysis
- 2005-2009 Confocal microscopy, Electron microscopy, cell biological analysis of membrane trafficking
- 1999-2004 Biochemical analysis of membrane trafficking by in vitro assays, Molecular biology techniques
- 1997-1999 Molecular biology
- 1994-1997 Plant tissue culture techniques

### Discoveries and inventions:

My research interests have centered on the cell biology of membrane trafficking, ranging from cellular microbiology studies using *in vitro* assays to studying mammalian secretory pathway functions in physiology and pathology by advanced microscopy and bioinformatic methods.

The key findings from my research are:

1. Molecular organization of the organelles *i.e.* appropriate localization and complex formation of its constituents, determines their proper functioning. We explored this paradigm experimentally using Golgi apparatus as a model system. Golgi apparatus is involved in processing (glycosylation) and sorting of one-third of the human proteome and nearly most of the lipids produced by the cell. We found that molecular machineries that appropriately position glycosylation enzymes in the Golgi influence its processing function. In particular, we have characterized how Grasp55 regulates the appropriate localization in the Golgi of glycosphingolipid biosynthetic enzyme(s) and impacts the proportion of glycosphingolipids produced by the organelle (*Manuscript in preparation*).

2. Identification of novel oncoproteins by analysis of cancer genomics datasets (*Manuscript in preparation*).

3. Golgi apparatus is arranged as a stack of flattened cisternae through which cargoes are transported while being glycosylated. How cargoes (proteins and lipids) traverse the stacked Golgi apparatus, while the residents remain in place has been a long-standing question in cell biology. We provided evidence showing that retention of proteins in the Golgi in the face of membrane flux across the organelle, is mediated by sorting them away from the flux in retrograde transport carriers (*J. Cell Biol* 2013). We also showed that there is more than one transport route across the Golgi and a faster route mediated by diffusion across transient connections between the Golgi cisternae is used by small molecules like albumin and anti-trypsin (*Elife* 2014).

4. Intracellular pathogens survive by diverting intracellular membrane trafficking pathways. We showed *Salmonella* actively regulated its own trafficking inside macrophages by its secretory products thus creating a protective niche where it replicates (*FEBS lett*, 2010; *J. Biol Chem* 2012).

5. The molecular bases of drug side effects remain unclear in most cases, in spite of their importance. I, along with others, developed and validated a bioinformatic method, based on transcriptional profiling, to identify the molecular mechanisms underlying the drug side effects (*Elife* 2015), like the molecular basis of gastric irritation caused by non-steroidal anti-inflammatory drugs, Ketoprofen and ibuprofen (*J. Cell. Physiol.* 2017).

6. Using this method we also identified signaling pathways that regulate proteostasis of misfolded proteins associated with genetic diseases (Cystic Fibrosis, Wilson's Disease) (*Elife*, 2015, *Hepatology*, 2016).

## Awards:

1. 2015	Christian Boulin Fellowship	EMBL, Germany
2. 2002	Travel grant	CSIR, India
3. 2001-2004	Senior Research Fellowship	CSIR, India
4. 1999-2004	Junior Research Fellowship	CSIR, India
5. 1997-1999	Biotechnology fellowship	DBT, GOI.
6. 1997	Gold medalist in B.Sc.,	Loyola College, India.
7. 1996	Merit Scholarship	Loyola College, India.
8. 1994	School topper in Chemistry, CBSE Class XII examination.	St. John's SS School, India.

## Publications:

### **As Corresponding author:**

1. Prathyush Pothukuchi, Ilenia Agliarulo, Marinella Pirozzi, Riccardo Rizzo, Domenico Russo, Gabriele Turacchio, Laura Capolupo, Maria Jose Hernandez-Corbacho, Giovanna Vanacore, Nina Dathan, Petra Henklein, Julian Nüchel, Markus Plomann, Lina M. Obeid, Yusuf A. Hannun, Alberto Luini, Giovanni D'Angelo, **Parashuraman S #**. (2020) Regulated compartmentalization of enzymes in Golgi by GRASP55 controls cellular glycosphingolipid profile and function. **Biorxiv**. <https://doi.org/10.1101/2020.05.03.074682> # denotes correspondence
2. Pothukuchi P, Agliarulo I, Russo D, Rizzo R, Russo F, **Parashuraman S #**. 2019. Translation of genome to glycome: role of the Golgi apparatus. *FEBS Lett* 593(17):2390-2411.
3. Hegde RN\*, **Parashuraman S\*#**, Iorio F, Ciciriello F, Capuani F, Carissimo A, Carrella D, Belcastro V, Subramanian A, Bounti L, Persico M, Carlile G, Galletta L, Thomas DY, Di Bernardo D, Luini A# (2015) Unravelling druggable signalling networks that control F508del-CFTR proteostasis. *Elife*, 4.  
# denotes co-correspondence

### **As Primary author:**

1. Beznoussenko GV\*, **Parashuraman S\***, Rizzo R, Polishchuk R, Martella O, Di Giandomenico D, Fusella A, Spaar A, Sallese M, Capestrano MG, Pavelka M, Vos MR, Rikers YG, Helms V, Mironov AA, Luini A (2014) Transport of soluble proteins through the Golgi occurs by diffusion via continuities across cisternae. *Elife*, 3.
2. Rizzo R \*, **Parashuraman S\***, Puri C, Lucocq J, Luini A (2013) The dynamics of engineered resident proteins in the mammalian Golgi complex relies on cisternal maturation. *J. Cell. Biol.* 201(7):1027-36.
3. **Parashuraman S\***, Madan R\*, Mukhopadhyay A (2010) NSF independent fusion of Salmonella-containing late phagosomes with early endosomes. *FEBS Lett.* 2010. 584(6): 1251-6.  
\* denotes equal contribution

### **Other peer-reviewed articles:**

1. Brandolini L, d'Angelo M, Antonosante A, Villa S, Cristiano L, Castelli V, Benedetti E, Catanesi M, Aramini A, Luini A, **Parashuraman S**, Mayo E, Giordano A, Cimini A, Allegretti M (2017) Differential protein modulation by ketoprofen and ibuprofen underlines different cellular response by gastric epithelium. *J Cell Physiol.* In press.
2. Campelo F, van Galen J, Turacchio G, **Parashuraman S**, Kozlov MM, García-Parajo MF, Malhotra V (2017) Sphingomyelin metabolism controls the shape and function of the Golgi cisternae. *Elife*, 6.
3. Capasso S, Sticco L, Rizzo R, Pirozzi M, Russo D, Dathan NA, Campelo F, van Galen J, Hölttä-Vuori M, Turacchio G, Hausser A, Malhotra V, Riezman I, Riezman H, Ikonen E, Luberto C, **Parashuraman S**, Luini A, D'Angelo G (2017) Sphingolipid

metabolic flow controls phosphoinositide turnover at the trans-Golgi network. **EMBO J.** 36(12): 1736-1754.

4. Raote I, Ortega Bellido M, Pirozzi M, Zhang C, Melville D, **Parashuraman S**, Zimmermann T, Malhotra V (2017) TANGO1 assembles into rings around COPII coats at ER exit sites. **J Cell Biol.** 216(4):901-909.

5. Curwin AJ, Brouwers N, Alonso Y Adell M, Teis D, Turacchio G, **Parashuraman S**, Ronchi P, Malhotra V (2016) ESCRT-III drives the final stages of CUPS maturation for unconventional protein secretion. **Elife.** 5.

6. Chesi G, Hegde RN, Iacobacci S, Concilli M, **Parashuraman S**, Festa BP, Polishchuk EV, Di Tullio G, Carissimo A, Montefusco S, Canetti D, Monti M, Amoresano A, Pucci P, van de Sluis B, Lutsenko S, Luini A, Polishchuk RS (2016) Identification of p38 MAPK and JNK as new targets for correction of Wilson disease-causing ATP7B mutants. **Hepatology.** 63(6):1842-59.

7. Madan R, Rastogi R, **Parashuraman S**, Mukhopadhyay A. (2012) Salmonella acquires lysosome-associated membrane protein 1 (LAMP1) on phagosomes from Golgi via SipC protein-mediated recruitment of host Syntaxin6. **J. Biol. Chem.** 287(8): 5574-87.

8. Mukherjee K, **Parashuraman S**, Krishnamurthy G, Majumdar J, Yadav A, Kumar R, Basu SK, Mukhopadhyay A (2002) Diverting intracellular trafficking of Salmonella to the lysosome through activation of the late endocytic Rab7 by intracellular delivery of muramyl dipeptide **J. Cell Sci.** 115 (Pt 18): 3693-701.

9. Mukherjee K, **Parashuraman S**, Raje M, Mukhopadhyay A (2001) SopE acts as an Rab5-specific nucleotide exchange factor and recruits non-prenylated Rab5 on Salmonella containing phagosomes to promote fusion with early endosomes. **J Biol. Chem.** 276(26): 23607-15.

### **Reviews:**

1. Hegde RN, Subramanian A, Pothukuchi P, **Parashuraman S**, Luini A (2017) Rare ER protein misfolding-mistrafficking disorders: Therapeutic developments. **Tissue Cell.** 49(2 Pt A):175-185.

2. Rizzo R, **Parashuraman S**, D'Angelo G, Luini A (2017) GOLPH3 and oncogenesis: What is the molecular link? **Tissue Cell.** 49(2 Pt A):170-174.

3 Russo D, **Parashuraman S**, D'Angelo G (2016) Glycosphingolipid-Protein Interaction in Signal Transduction. **Int J Mol Sci.** Oct 15;17(10).

4. Luini A, **Parashuraman S** (2016) Signaling at the Golgi: sensing and controlling the membrane fluxes. **Curr Opin Cell Biol.** 39:37-42.

5. Rizzo R, **Parashuraman S**, Luini A (2014 ) Correlative video-light-electron microscopy: development, impact and perspectives. **Histochem Cell Biol.** 142(2):133-8.

6. **Parashuraman S**, Mukhopadhyay A (2005) Assay and functional properties of SopE in the recruitment of Rab5 on Salmonella-containing phagosomes. **Methods Enzymol.** 403:295-309.

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**Book Chapters:**

1. Luini A and **Parashuraman S** (2016) Golgi and TGN. In Encyclopedia of Cell Biology, Bradshaw RA and Stahl PD (ed) 2:183-191 Elsevier Inc.
2. Chavan SG, Tripathi KP, Piccirilo M, Roy P, Guarracino MR, Luini A, **Parashuraman S** (2016) Dissecting the Functions of the Secretory Pathway by Transcriptional Profiling. In Dynamics of Mathematical Models in Biology Rogato, A, Zazzu, V, Guarracino, MR (ed) pp 79-87 Springer International Publishing, Switzerland.
3. Piccirilo M, Tripathi KP, Chavan SG, Varavallo A, **Parashuraman S**, Guarracino MR (2016) Reconstructing a Genetic Network from Gene Perturbations in Secretory Pathway of Cancer Cell Lines. In Dynamics of Mathematical Models in Biology Rogato, A, Zazzu, V, Guarracino, MR (ed) pp 65-77 Springer International Publishing, Switzerland.
4. Tripathi KP, Chavan SG, **Parashuraman S**, Piccirilo M, Magliocca S, Guarracino MR (2015) Comparison of gene expression signature using rank based statistical inference. In International Meeting on Computational Intelligence Methods for Bioinformatics and Biostatistics pp 28-41 Springer International Publishing, Switzerland.
5. **Parashuraman S**, Piccirilo M, Magliocca S, Guarracino MR (2015) Comparison of Gene Expression Signature Using Rank Based Statistical Inference. Computational Intelligence Methods for Bioinformatics and Biostatistics, Revised Selected Papers Angelini C, Rancoita PMV, Rovetta S (ed) 9874: 28-41, Springer International Publishing, Switzerland.

**Patents:**

1. 2015 Kinase and ubiquitin ligase inhibitors and uses thereof. (No. 102015000084815)

**Non-academic publications:**

1. D'angelo G and Parashuraman S (2012) The descent of language: A conversation between two jobless biologists S&F n. 10\_2013; ISSN 2036-2927.