

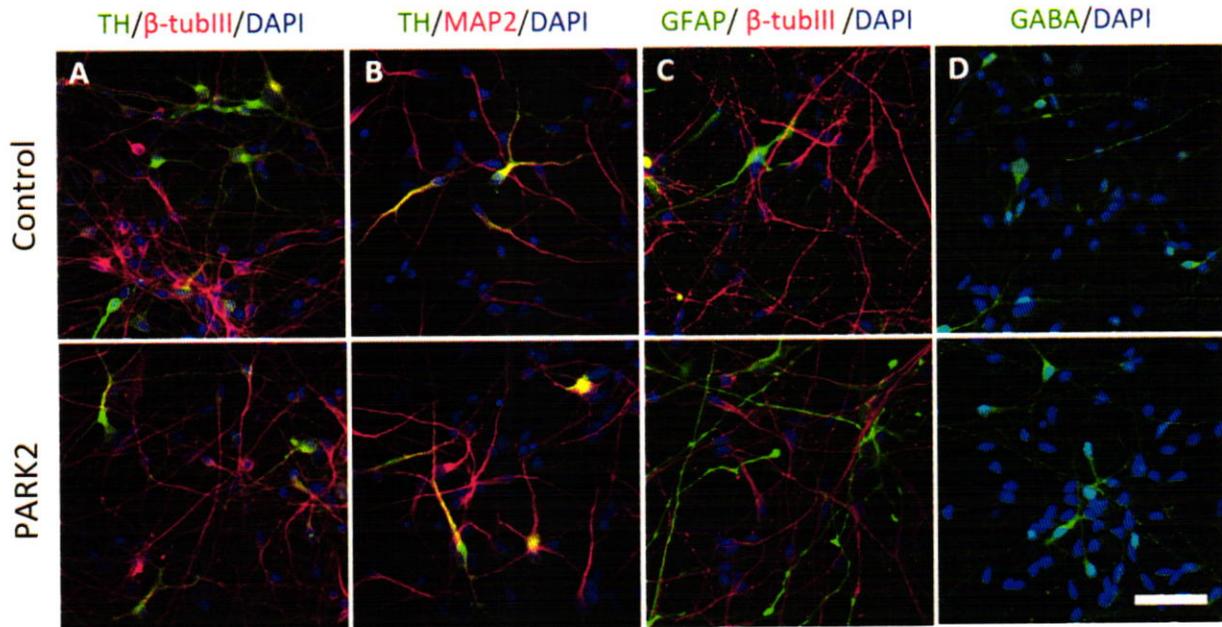
## REPORT

Report on participation of the ICMR International Fellow (ICMR-IF) in Training/Research abroad.

1. Name and designation of ICMR- IF : **Dr.V.Balachandar**  
**Assistant Professor, Bharathiar University**
  
2. Address : **Department of Human Genetics and Molecular Biology**  
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3. Frontline area of research in which training/research was carried out :  
**“Human Induced Pluripotent Stem Cell Research”**
  
4. Name & address of Professor and host institute  
**Dr. Morten Meyer, Ph.D.**  
**Associate Professor, Department of Neurobiology Research**  
**Institute of Molecular Medicine, University of Southern Denmark**  
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5. Duration of fellowship : **6 Months (October, 2018 to April, 2019)**
  
6. Highlights of work conducted
  - i) Technique/expertise acquired :
  
  - **Conducted research using human induced pluripotent stem cells (hiPSCs) with familial Parkinsons disease (PD)**
  - **Validated the stem cell derived human dopaminergic neurons in hemi-parkinsonian rat model of Parkinson’s Disease.**
  - **Differentiation of neural stem cells and hiPSCs.**
  - **Identification of molecular and biochemical signals regulating cell fate decisions, emphasizing the formation of functional dopaminergic neurons with mid brain characteristics in Parkinson’s disease.**
  - **Early cellular changes that underlie the onset of neurodegeneration in familial Parkinson’s disease (cells with and without PARK2 mutations). This includes the use of isogenic stem cells in combination with advanced molecular assay.**
  - **Characterization of stem cells derivatives by immunocytochemistry, western blotting, morphometry and quantitative analysis.**

- ii) Research results, including any papers, prepared/submitted for publication :

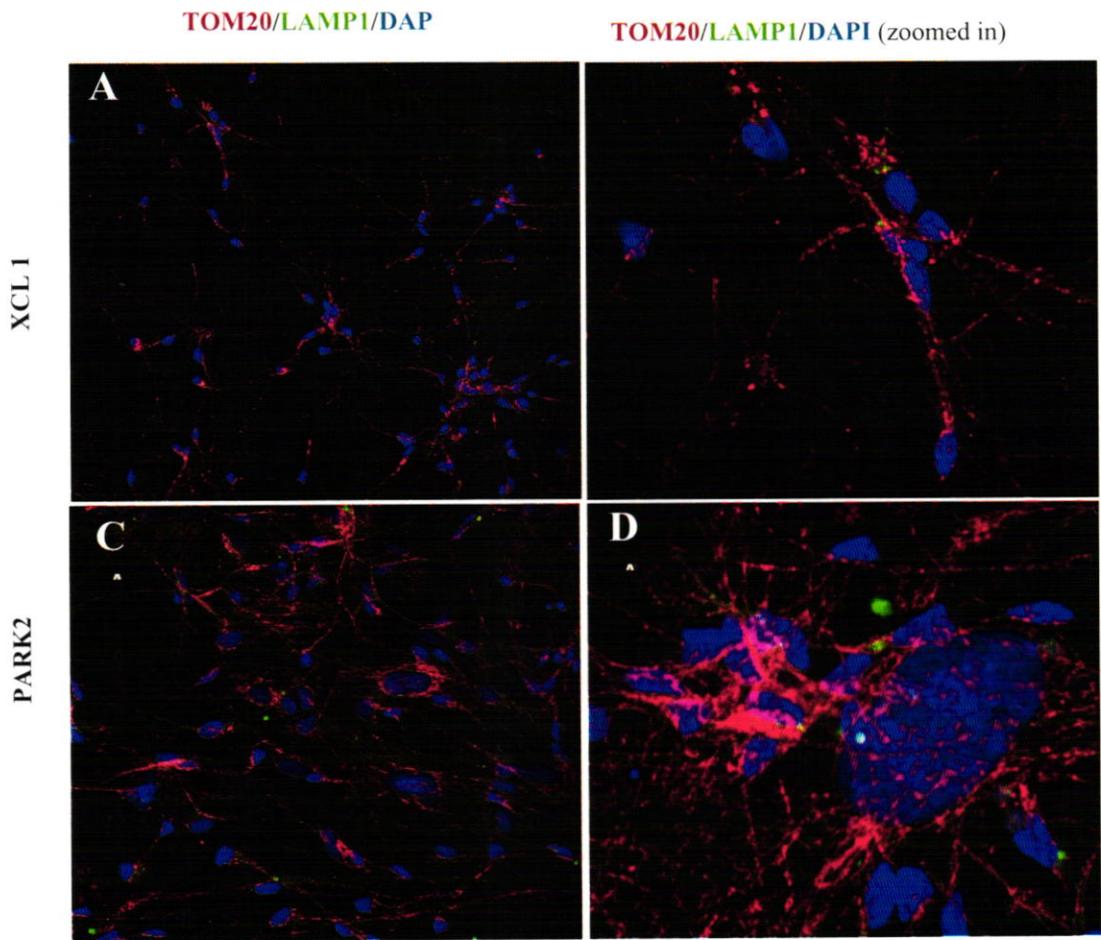
**General characterization of XCL1 and PARK2 (PD) iPSC-derived neuronal cultures day 25 of differentiation**



**Markers used**

- TH** – marker for dopaminergic neurons;
- TUJ1** – marker for newly formed neurons;
- MAP2** – marker for mature neurons;
- GABA** – marker for GABAergic neurons;
- GFAP** – marker for astrocytes

Stainings visualising the mitochondria and lysosomes in iPSC-derived dopaminergic neurons with (C, D) and without (A,B) *PARK2* mutation. Accumulation of mitochondria and a swollen nuclei visible in *PARK2* mutated cell line (D).



**Markers used:**

TOM20 - Marker for the outer mitochondrial membrane;

LAMP1 - lysosomal marker.

DAPI - Marker for cell nuclei