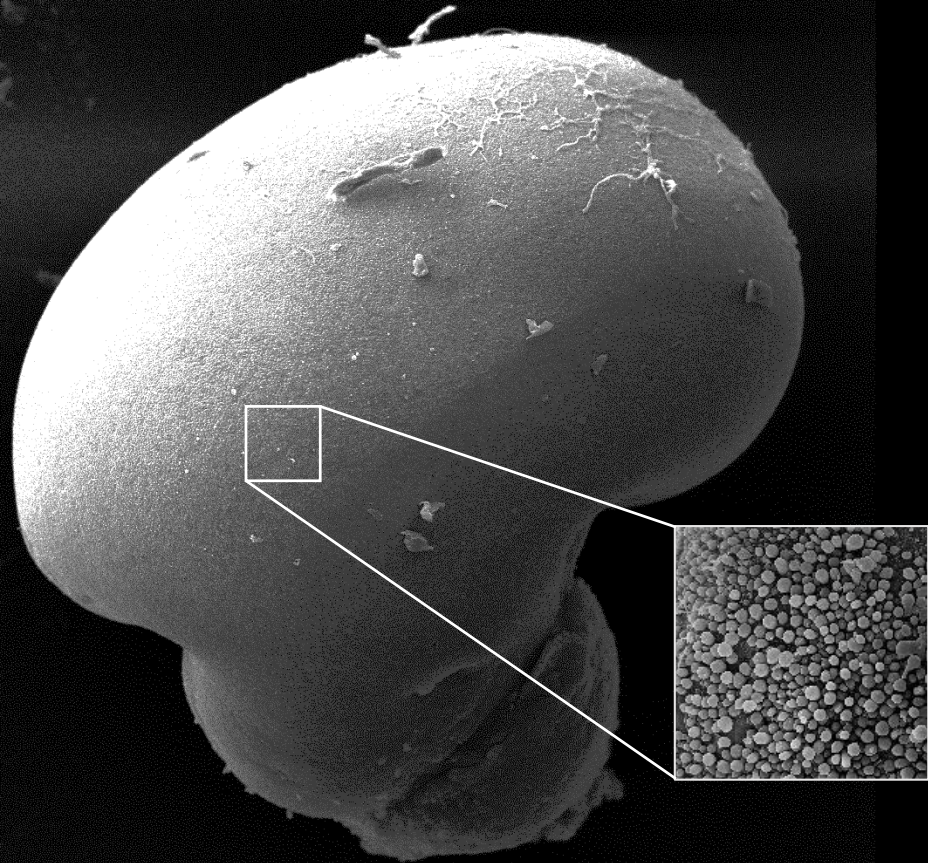


# Modelling human vision in a dish

Tomáš Bárta

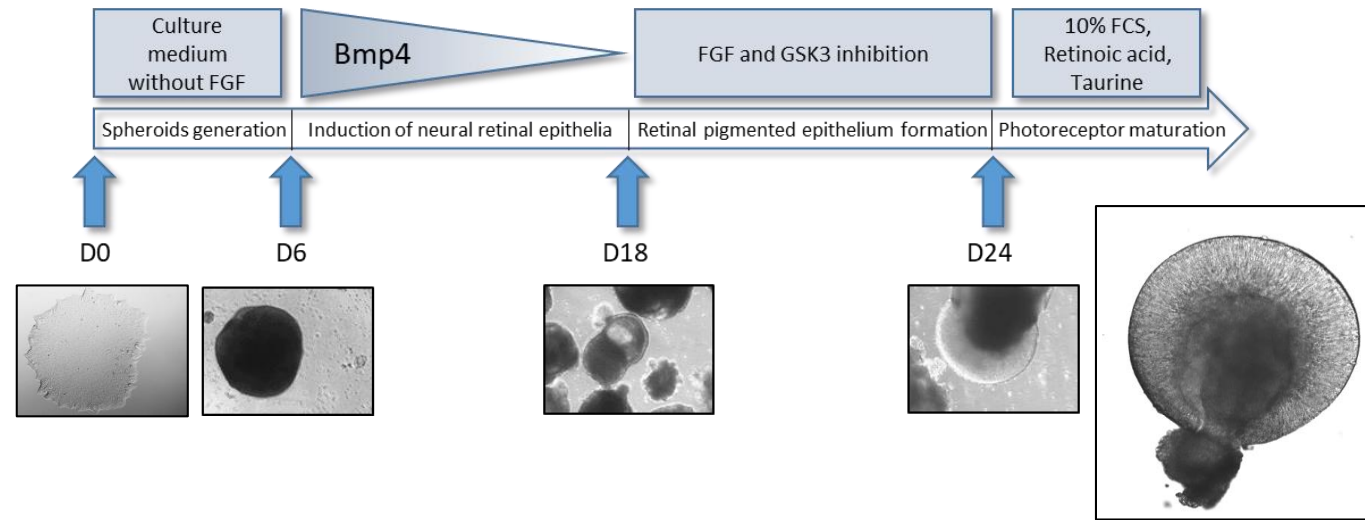
Department of Histology and  
Embryology, LF, MU



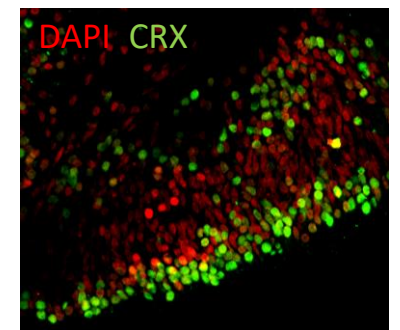
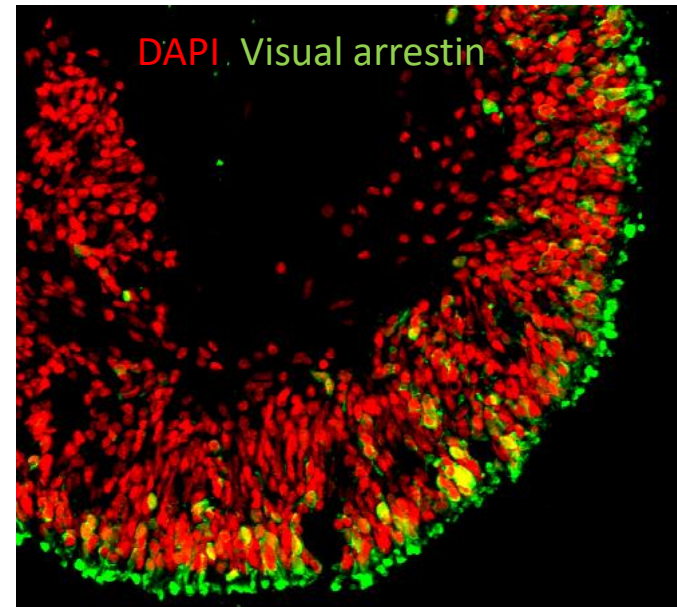
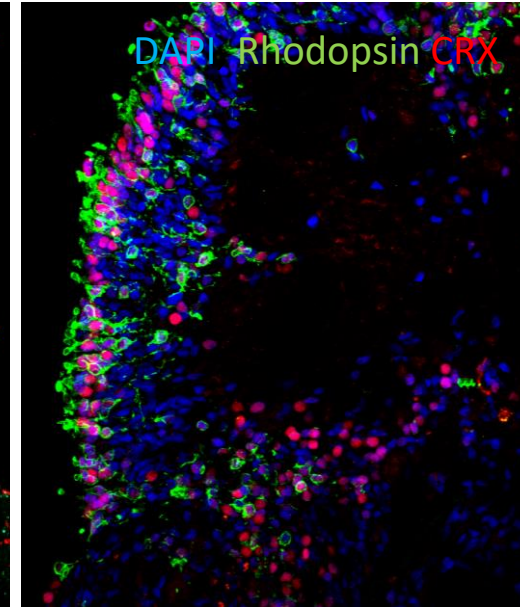
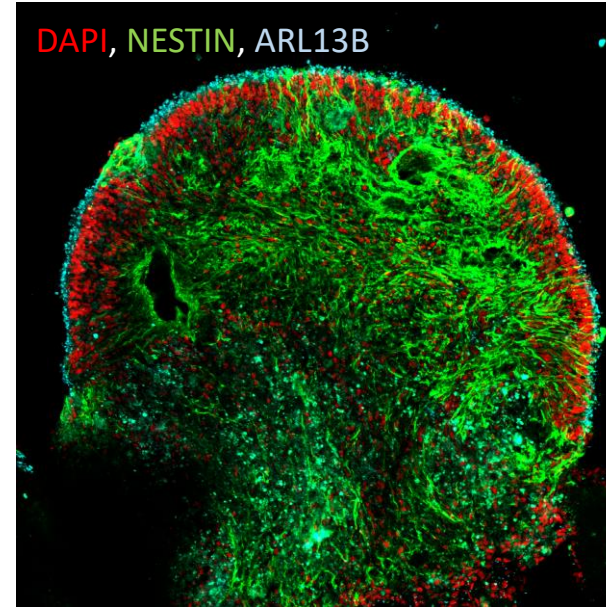
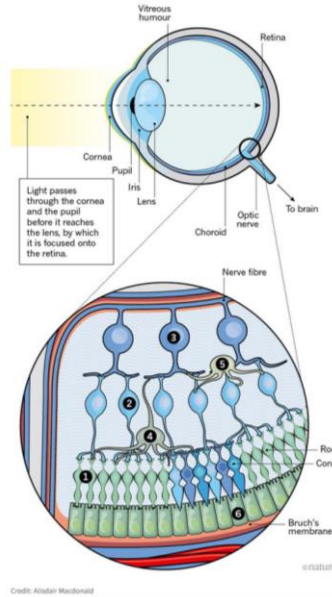
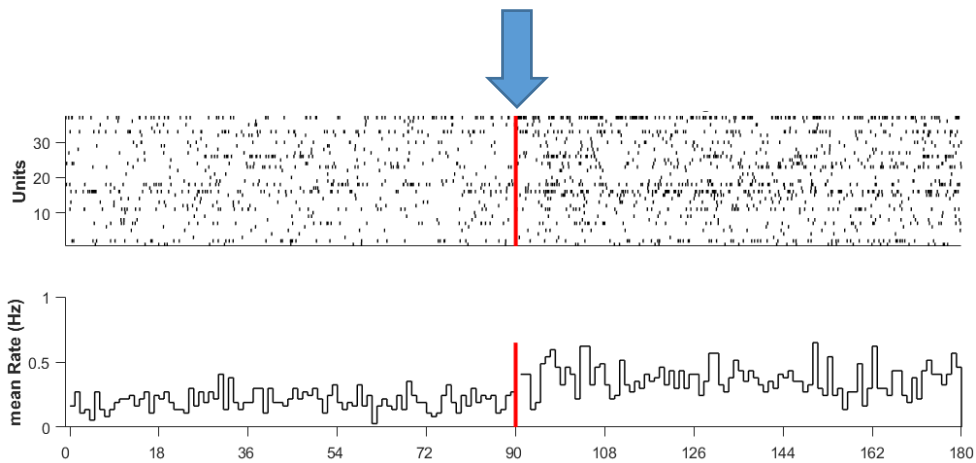
Contact: [tbarta@med.muni.cz](mailto:tbarta@med.muni.cz)  
<https://www.med.muni.cz/histology/tomas-barta/>



# Retinal organoids derived from human pluripotent stem cells

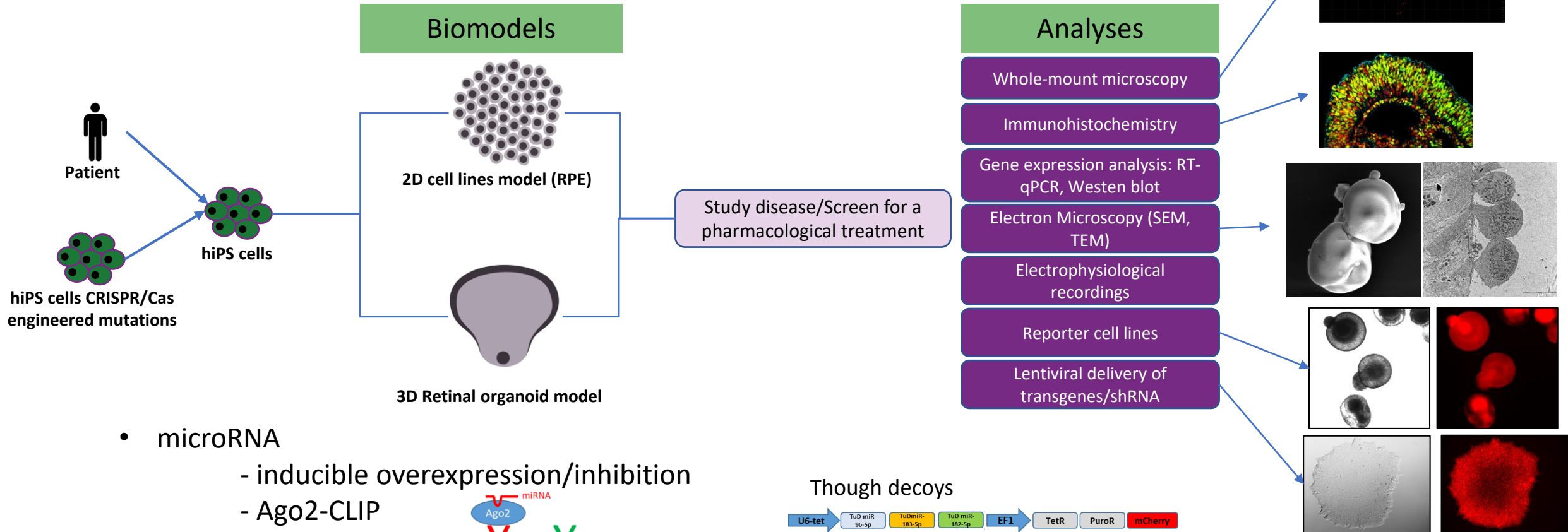


Pulsed light

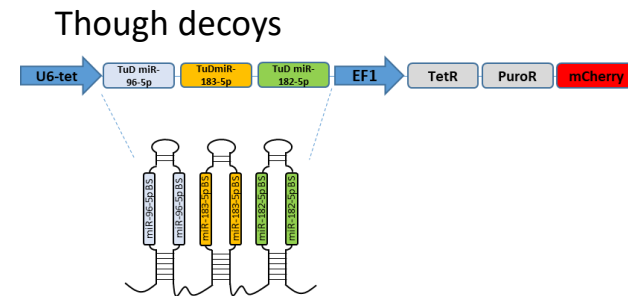
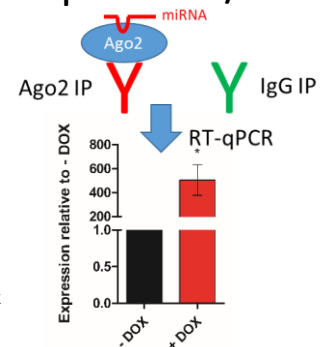
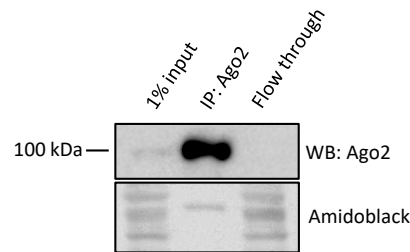


# Our expertise

- hiPSCs/hESCs, organoids



- microRNA
  - inducible overexpression/inhibition
  - Ago2-CLIP



# Our Projects

- Development of tools for microRNA studies (Though Decoys, sponges)
- The role of microRNA in cell reprogramming and specification

Article | [Open Access](#) | Published: 31 October 2019

## Oct4-mediated reprogramming induces embryonic-like microRNA expression signatures in human fibroblasts

Lucie Peskova, Katerina Cerna, Jan Oppelt, Marek Mráz & Tomas Barta

*Scientific Reports* 9, Article number: 15759 (2019) | [Cite this article](#)

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## Brief Report: Inhibition of miR-145 Enhances Reprogramming of Human Dermal Fibroblasts to Induced Pluripotent Stem Cells

Tomas Barta, Lucie Peskova, Joseph Collin, David Montaner, Irina Neganova, Lyle Armstrong, Majlinda Lako

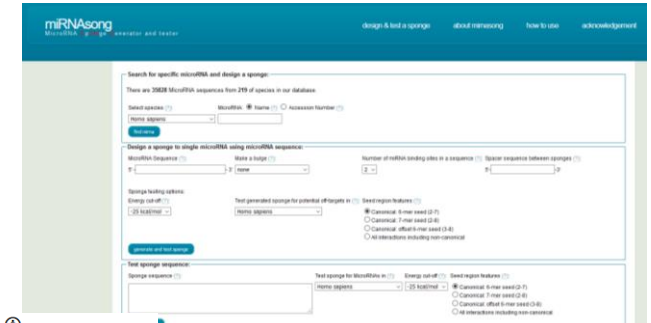
First published: 29 September 2015 | <https://doi.org/10.1002/stem.2220> | Citations: 21

Embryonic Stem Cells/Induced Pluripotent Stem Cells | [Open Access](#) | [CC BY](#)

## Pluripotent Stem Cell-Derived Hematopoietic Progenitors Are Unable to Downregulate Key Epithelial-Mesenchymal Transition-Associated miRNAs

Ellie Meader, Tomas Barta, Dario Melguizo-Sanchis, Katarzyna Tilgner, David Montaner, Ashraf A. El-Harouni, Lyle Armstrong, Majlinda Lako

## miRNAsong: a web-based tool for generation and testing of miRNA sponge constructs *in silico*



## Reprogramming of somatic cells: possible methods to derive safe, clinical-grade human induced pluripotent stem cells

Justyna Augustyniak<sup>1</sup>, Marzena Zychowicz, Martyna Podobinska, Tomas Barta, Leonora Buzanska

Affiliations + expand  
PMID: 25576968

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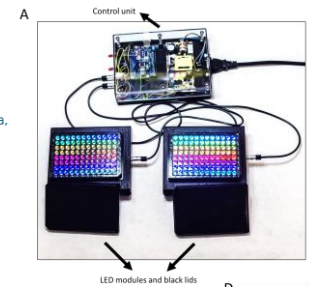
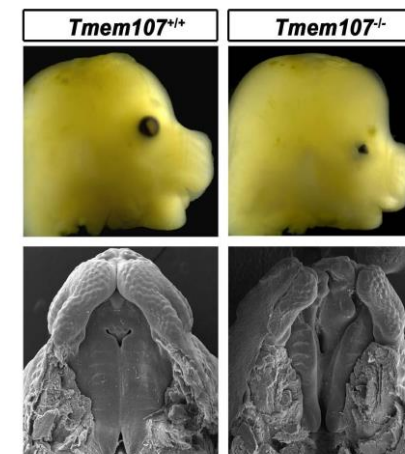
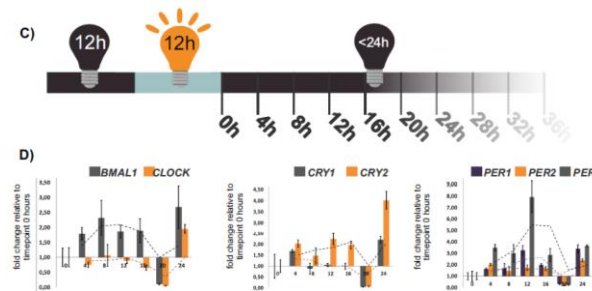
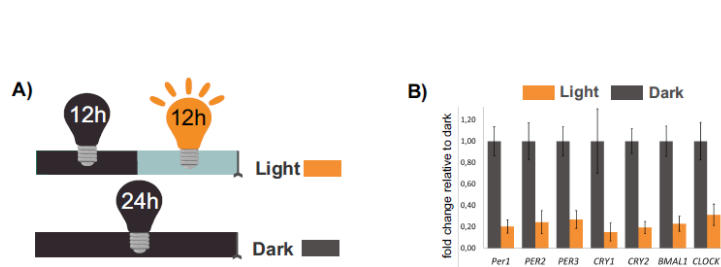
- The role of microRNAs in human retina development and function

miR-183/96/182 cluster is an important morphogenetic factor targeting *PAX6* expression in differentiating human retinal organoids

Lucie Peskova, Denisa Jurcikova, Tereza Vanova, Jan Krivanek, Michaela Capandova, Zuzana Sramkova, Jana Sebestikova, Magdalena Kouluskova, Hana Kotasova, Libor Streit, Tomas Barta

First published: 01 September 2020 | <https://doi.org/10.1002/stem.3272>

- Retinal organoids as a tool for investigating human circadian rhythms



- Modelling Retinitis Pigmentosa (PRPF8 – David Staněk, IMG, CAS)

- TMEM107