Functional characterization of beta-arrestin 1 in neuroendocrine tumor cell lines

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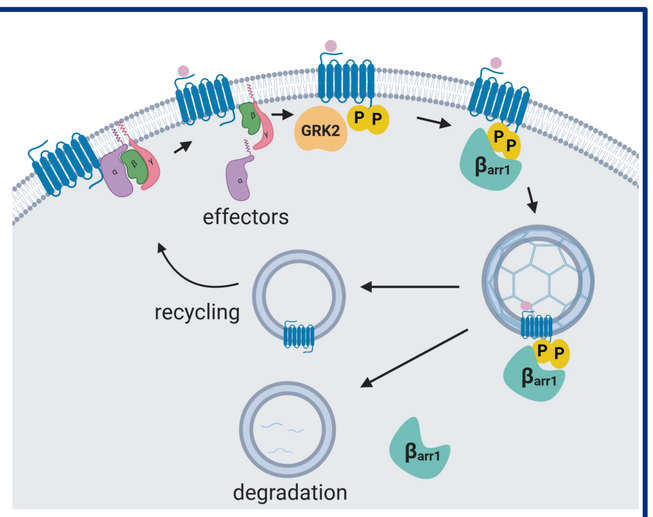
INTRODUCTION & AIM

β-arrestin 1 (ARRB1) belongs to a family of intracellular proteins primarily known for their role in **GPCR trafficking**, including SST2. Emerging evidence points to **GPCR-independent involvement** of β-arrestins **in cellular signaling and proliferation**.



We **aim** to elucidate the **functional role of β-arrestin 1 in NET** development and progression, and response to treatment with somatostatin analogs.

METHODS

Cell lines: 1) BON-1 (pancreatic NET)
2) H727 (bronchial carcinoid)
3) GOT1 (small intestine NET)

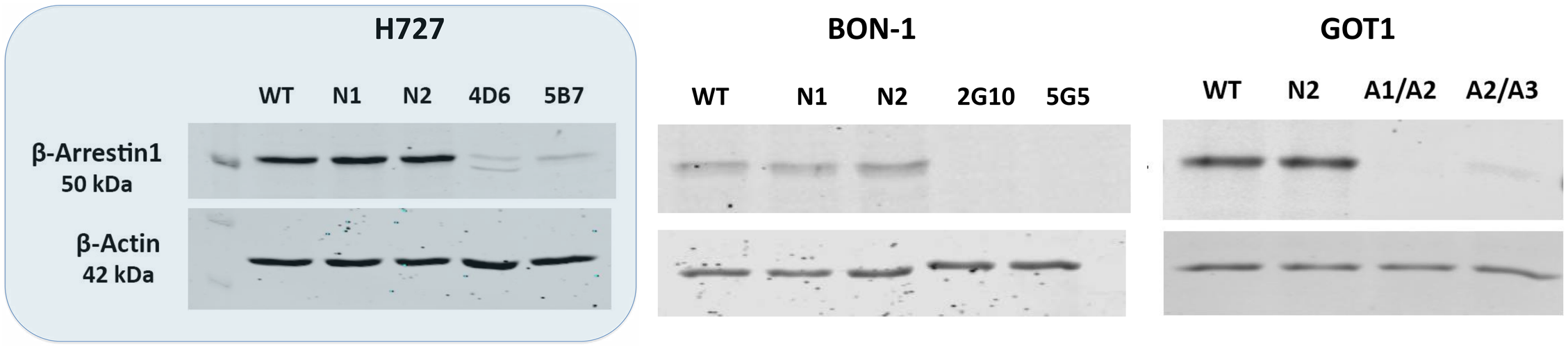
Knock-out of ARRB1 by **CRISPR-Cas9** verified by **Western Blot**

Evaluation of knock-out cells for:

- expression of SSTs and β-arrestins (**RT-qPCR and immunocytochemistry)**
- Cell growth/proliferation (**DNA quantification**)

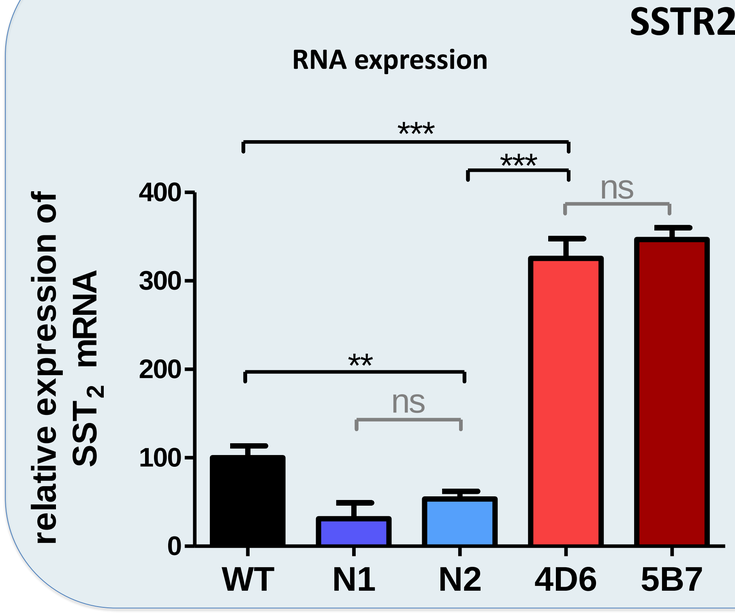
RESULTS

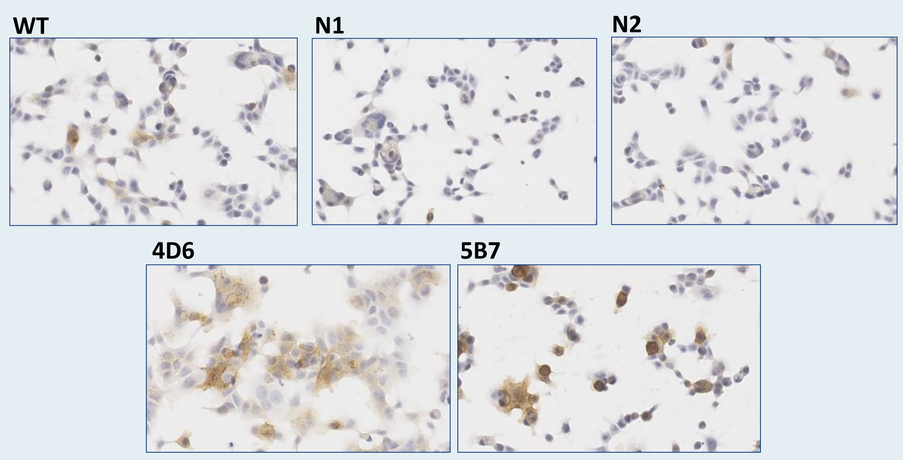
ARRB1 KO in NET cell lines



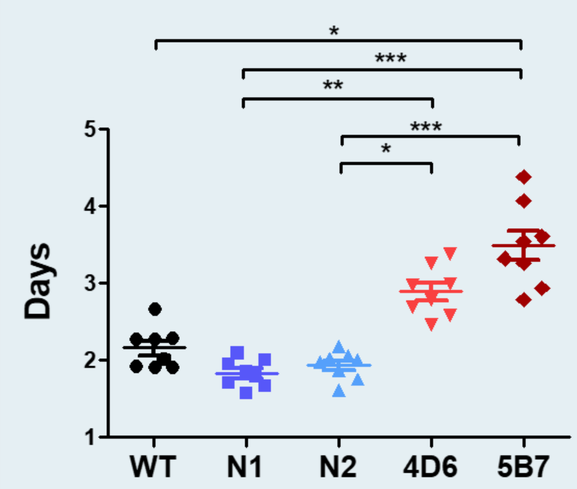
H727

SSTR2 upregulation





Increased doubling time



CONCLUSIONS

β-arrestin 1 KO resulted in:

- **upregulation of SST_2** in H727 (both at mRNA and protein level): possible implication in response to treatment with somatostatin analogues
- **decreased growth rate** of H727: involvement in cell growth/proliferation

Ongoing work:

- Evaluation of SSTs expression and cells growth rate in BON-1 and GOT1 ARRB1 KO cells
- Response of ARRB1 KO cell lines to somatostatin analogues

The authors have no conflict of interest to disclose