Dynamical modeling of miR-34a, miR-449a, and miR-16 reveals numerous DDR signaling pathways regulating senescence, autophagy, and apoptosis in HeLa cells

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Co-authors: P.K.P: pritam.panda@physics.uu.se R.F.H: ronaldo@ime.usp.br   S.K.S: shailesh.samal@ki.se S.M: sumanmishra2615@gmail.com S.K.V: suresh.verma@physics.uu.se Y.K.M: mishra@mci.sdu.dk R.A: rajeev.ahuja@physics.uu.se
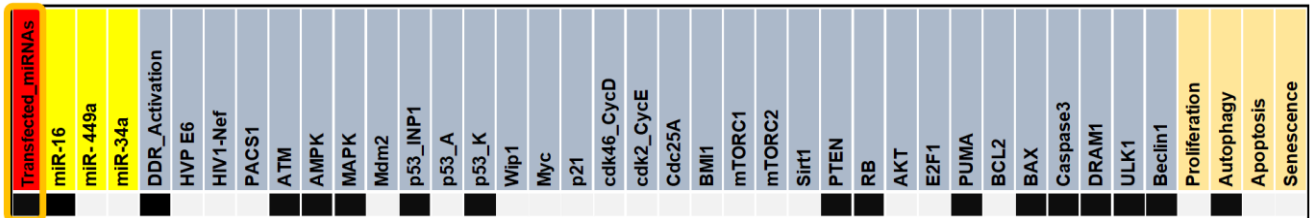
Supplementary File S1

Agreement between proposed Synthetic Boolean model and experimental data

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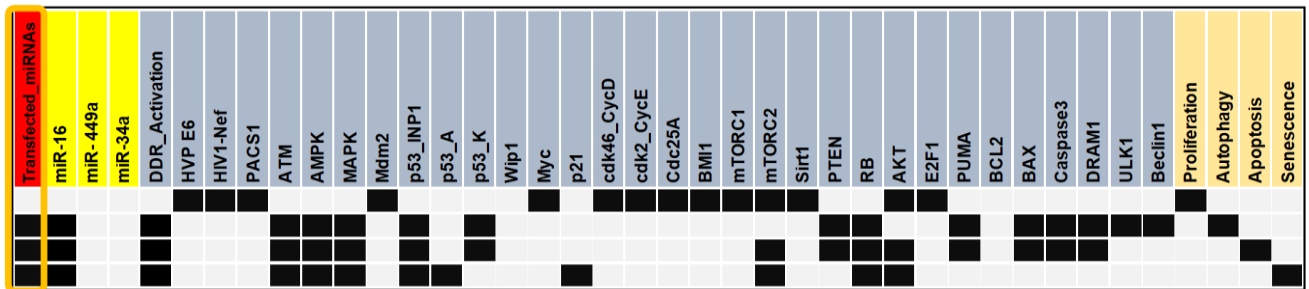### Transfection of miR-16

Response/Phenotype: Induction of autophagy, apoptosis and senescence in response to DNA damage

Knockdown (KO) of mTOR2

Response/Phenotype: Induction of Autophagy in response to DNA damage
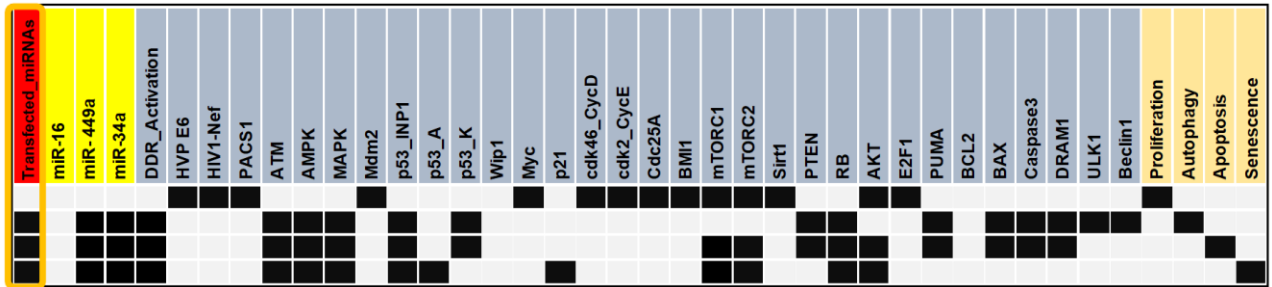
Knockdown (KO) of mTOR1

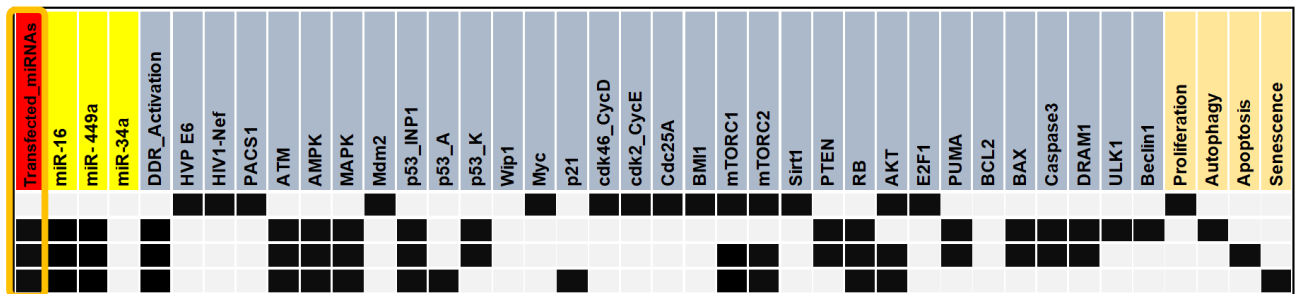**Response/Phenotype: Induction of autophagy, apoptosis and senescence**

Transfection of miR-449a

Response/Phenotype: Induction of apoptosis and senescence in response to DNA damage

Transfection of miR-34a

Response/Phenotype: Induction of apoptosis and senescence in response to DNA damage

Knockdown (KO) of PACS1

Response/Phenotype: Induction of apoptosis and senescence in response to DNA damage

Synthetic Boolean network predictions based on experimental studies

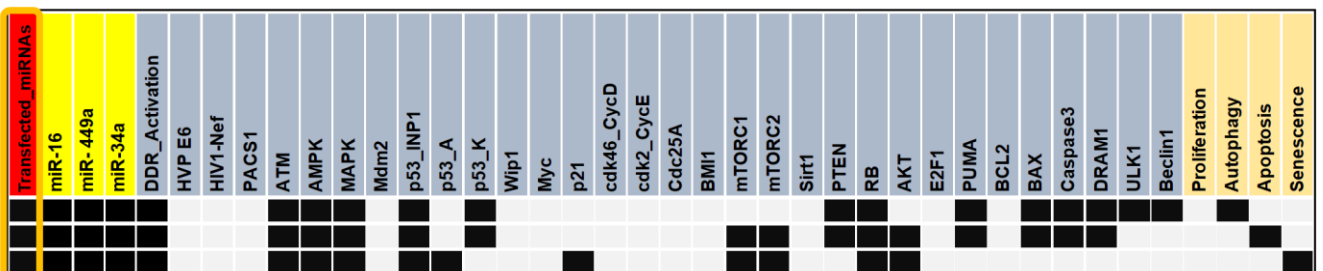## Synergistic regulation between miR-34a and miR-449a

Response/Phenotype: Induction of autophagy, apoptosis and senescence in response to DNA damage

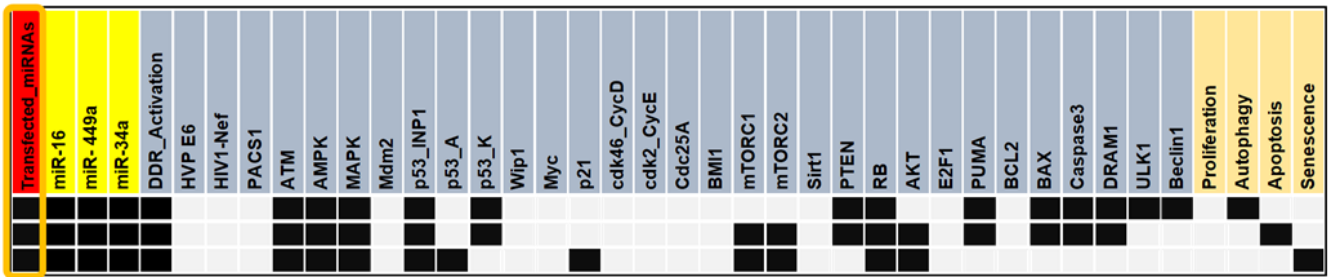## Synergistic regulation between miR-16 and miR-449a

Response/Phenotype: Induction of autophagy, apoptosis and senescence in response to DNA damage

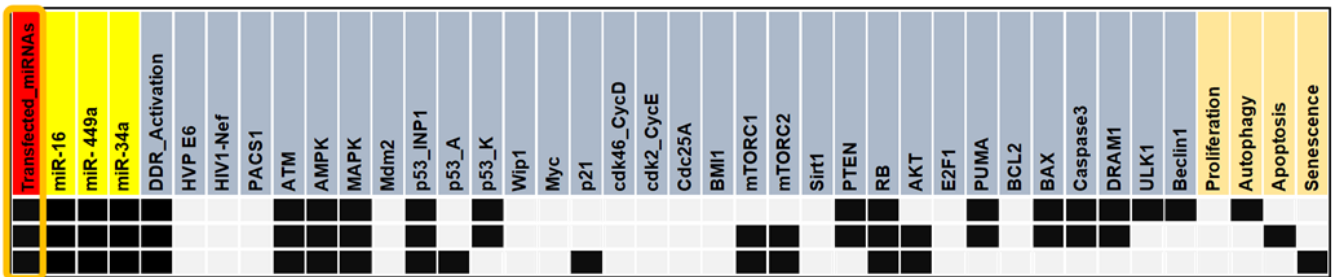## Synergistically overexpression (E1) of miR-449a/miR-34a/miR-16

Response/Phenotype: Induction of functional and stable G1/S checkpoint.

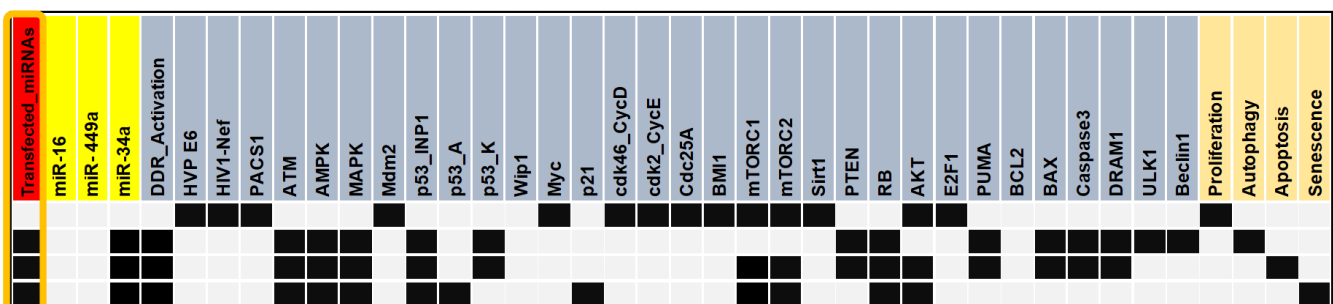## Targeting of Cdc25A by miR-16/miR-34a/miR-449a

Response/Phenotype: Repression of proliferation through the induction of DNA Damage Response pathways

Knockdown (KO) of PACS1

Response/Phenotype: Repression of proliferation through the induction of autophagy along with apoptosis and senescence

Transfection of miR-34a

Response/Phenotype: Inhibition of proliferation and induction of senescence, autophagy and apoptosis