

# Topological data analysis distinguishes parameter regimes in the Anderson-Chaplain model of angiogenesis

John T. Nardini<sup>1</sup>, Bernadette J. Stolz<sup>2</sup>, Kevin B. Flores<sup>1</sup>, Heather A. Harrington<sup>2</sup>, Helen M. Byrne<sup>\*2</sup>

**1** Department of Mathematics, North Carolina State University, Raleigh, North Carolina, USA

**2** Mathematical Institute, University of Oxford, Oxford, OX2 6GG, UK

\* [helen.byrne@maths.ox.ac.uk](mailto:helen.byrne@maths.ox.ac.uk)

Feature	In Sample Accuracy	Out of Sample Accuracy
$\text{PIO}_0(K^{flood}) \ \& \ \text{PIR}_1(K^{flood})$	73.2%	66.4%
$\text{PIR}_0(K^{flood}) \ \& \ \text{PIR}_1(K^{flood})$	71.9%	65.6%
$\text{BC}_0(K^{flood}) \ \& \ \text{BC}_1(K^{flood})$	74.6%	65.0%
$\text{PIO}_0(K^{flood}) \ \& \ \text{BC}_1(K^{flood})$	72.6%	63.9%
$\text{PIR}_1(K^{flood}) \ \& \ \text{BC}_1(K^{flood})$	72.6%	63.4%
$\text{PIR}_0(K^{flood}) \ \& \ \text{BC}_1(K^{flood})$	72.6%	63.4%
$\text{PIO}_1(K^{flood}) \ \& \ \text{BC}_1(K^{flood})$	72.7%	63.4%
$\text{PIO}_0(K^{flood}) \ \& \ \text{PIO}_1(K^{flood})$	70.7%	62.5%
$\text{PIO}_1(K^{flood}) \ \& \ \text{PIR}_0(K^{flood})$	71.2%	60.6%
$\text{PIO}_1(K^{flood}) \ \& \ \text{PIR}_1(K^{flood})$	70.6%	59.8%
$\text{PIO}_0(K^{flood}) \ \& \ \text{BC}_0(K^{flood})$	66.4%	53.4%
$\text{PIO}_1(K^{flood}) \ \& \ \text{BC}_0(K^{flood})$	66.6%	52.1%
$\text{PIO}_0(K^{flood}) \ \& \ \text{PIR}_0(K^{flood})$	62.1%	51.5%
$\text{PIR}_1(K^{flood}) \ \& \ \text{BC}_0(K^{flood})$	66.1%	51.0%
$\text{PIR}_0(K^{flood}) \ \& \ \text{BC}_0(K^{flood})$	66.1%	51.0%

**S4 Table. Double flooding clustering.** Out of Sample Accuracy scores for doubles of feature vectors from the flooding filtration using  $k$ -means classification with  $k = 5$ .