Table S1. Statistical results of the models developed using the backpropagation with Jacobian derivatives algorithm. Numbers in green and bold represent the models with the highest correlation and determination coefficients.

Algorithm	Neurons	Stage	R	R²	b	MSE
Levenberg Marquardt	10	Training	0.98	0.96	0.95	0.01
		Validation	0.91	0.83	0.86	0.04
		Testing	0.91	0.83	0.92	0.05
		Overall	0.96	0.92	0.94	0.02
	7	Training	**0.96**	**0.92**	**0.94**	**0.02**
		Validation	**0.95**	**0.90**	**1.00**	**0.06**
		Testing	**0.95**	**0.90**	**1.10**	**0.05**
		Overall	**0.95**	**0.90**	**0.98**	**0.03**
	5	Training	0.97	0.94	0.89	0.01
		Validation	0.90	0.81	0.82	0.06
		Testing	0.95	0.9	0.71	0.05
		Overall	0.95	0.9	0.84	0.02
Bayesian Regularization	10	Training	1.00	1.00	1.00	<0.01
		Validation	-	-	-	-
		Testing	0.89	0.79	0.86	0.07
		Overall	0.98	0.96	0.98	0.01
	7	Training	**0.99**	**0.98**	**0.97**	**0.01**
		Validation	**-**	**-**	**-**	**-**
		Testing	**0.97**	**0.94**	**1.1**	**0.03**
		Overall	**0.98**	**0.96**	**1.0**	**0.01**
	5	Training	0.98	0.96	0.95	0.01
		Validation	-	-	-	-
		Testing	0.95	0.9	0.87	0.05
		Overall	0.97	0.94	0.94	0.01

Table S2. Statistical results of the models developed using the backpropagation with gradient derivative algorithms. Numbers in red and italics represent the models with the lowest correlation and determination coefficients, while those in green and bold represent the highest values.

Algorithm	Neurons	Stage	R	R²	Slope	MSE
Broyden, Fletcher, Goldfarb, and Shanno quasi-Newton	10	Training	0.91	0.83	0.86	0.05
		Validation	0.88	0.77	0.74	0.05
		Testing	0.91	0.83	0.79	0.04
		Overall	0.91	0.83	0.84	0.04
	7	Training	0.95	0.9	0.89	0.03
		Validation	0.87	0.76	0.76	0.05
		Testing	0.81	0.66	0.48	0.07
		Overall	0.92	0.85	0.83	0.03
	5	Training	0.91	0.83	0.82	0.04
		Validation	0.92	0.85	0.77	0.05
		Testing	0.92	0.85	0.99	0.05

		Overall	0.92	0.85	0.85	0.04
	10	Training	0.93	0.86	0.88	0.04
		Validation	0.91	0.83	0.73	0.05
		Testing	0.88	0.77	0.73	0.08
		Overall	0.91	0.83	0.83	0.04
Conjugate gradient Powell-Beale restarts	7	Training	0.94	0.88	0.85	0.03
		Validation	0.92	0.85	0.90	0.06
		Testing	0.88	0.77	0.94	0.08
		Overall	0.92	0.85	0.87	0.04
	5	Training	0.89	0.79	0.80	0.04
		Validation	0.92	0.85	0.82	0.09
		Testing	0.93	0.86	0.68	0.14
		Overall	0.88	0.77	0.78	0.05
	10	Training	0.94	0.88	0.88	0.03
		Validation	0.93	0.86	0.82	0.05
		Testing	0.93	0.86	1.10	0.07
		Overall	0.93	0.86	0.93	0.04
Conjugate gradient with Fletcher-Reeves updates	7	Training	0.94	0.88	0.89	0.03
		Validation	0.94	0.88	0.86	0.05
		Testing	0.84	0.71	0.76	0.06
		Overall	0.92	0.85	0.87	0.03
	5	Training	0.93	0.86	0.84	0.03
		Validation	0.89	0.79	0.91	0.06
		Testing	0.87	0.76	0.83	0.06
		Overall	0.92	0.85	0.85	0.04
	10	Training	0.96	0.92	0.92	0.02
		Validation	0.91	0.83	0.91	0.04
		Testing	0.92	0.85	1.30	0.14
		Overall	0.93	0.86	1.00	0.04
Conjugate gradient with Polak-Ribiere updates	7	Training	0.94	0.88	0.89	0.02
		Validation	0.85	0.72	0.58	0.07
		Testing	0.94	0.88	0.73	0.12
		Overall	0.91	0.83	0.77	0.03
	5	Training	0.94	0.88	0.87	0.03
		Validation	0.90	0.81	0.83	0.08
		Testing	0.94	0.88	0.86	0.02
		Overall	0.93	0.86	0.86	0.03
	10	Training	0.85	0.72	0.64	0.04
		Validation	0.73	0.53	0.41	0.06
		Testing	0.86	0.74	0.87	0.05
		Overall	0.83	0.69	0.64	0.05
Gradient descent backpropagation	7	*Training*	*0.81*	*0.66*	*0.57*	*0.05*
		Validation	*0.69*	*0.48*	*0.47*	*0.07*
		Testing	*0.77*	*0.59*	*0.68*	*0.04*
		Overall	*0.78*	*0.61*	*0.57*	*0.05*
	5	*Training*	*0.83*	*0.69*	*0.6*	*0.04*
		Validation	*0.67*	*0.45*	*0.39*	*0.07*

		Testing	*0.65*	*0.42*	*0.57*	*0.11*
		Overall	*0.77*	*0.59*	*0.56*	*0.06*
Gradient descent with adaptive learning rate	10	Training	0.93	0.86	0.84	0.03
		Validation	0.91	0.83	0.75	0.07
		Testing	0.91	0.83	0.70	0.08
		Overall	0.92	0.85	0.78	0.03
	7	Training	0.94	0.88	0.90	0.03
		Validation	0.79	0.62	0.68	0.09
		Testing	0.90	0.81	0.87	0.08
		Overall	0.91	0.83	0.86	0.04
	5	Training	0.90	0.81	0.80	0.05
		Validation	0.91	0.83	0.90	0.05
		Testing	0.91	0.83	0.80	0.05
		Overall	0.90	0.81	0.82	0.04
Gradient descent with momentum	10	Training	0.86	0.74	0.72	0.06
		Validation	0.84	0.71	0.69	0.04
		Testing	0.83	0.69	0.75	0.04
		Overall	0.85	0.72	0.72	0.05
	7	Training	0.81	0.66	0.64	0.06
		Validation	0.86	0.74	0.78	0.06
		Testing	0.80	0.64	0.53	0.04
		Overall	0.82	0.67	0.65	0.05
	5	Training	0.72	0.52	0.52	0.08
		Validation	0.87	0.76	0.56	0.02
		Testing	0.84	0.71	0.48	0.03
		Overall	0.77	0.59	0.52	0.05
Gradient descent with momentum and adaptive learning rate	10	Training	0.93	0.86	0.87	0.03
		Validation	0.96	0.92	1.10	0.05
		Testing	0.91	0.83	0.87	0.05
		Overall	0.93	0.86	0.94	0.03
	7	Training	0.96	0.92	0.92	0.02
		Validation	0.85	0.72	0.79	0.06
		Testing	0.91	0.83	0.92	0.05
		Overall	0.95	0.9	0.91	0.03
	5	Training	0.94	0.88	0.89	0.03
		Validation	0.93	0.86	0.79	0.03
		Testing	0.92	0.85	0.94	0.05
		Overall	0.93	0.86	0.87	0.03
One step secant	10	Training	0.93	0.86	0.85	0.03
		Validation	0.94	0.88	0.82	0.04
		Testing	0.86	0.74	0.66	0.10
		Overall	0.91	0.83	0.81	0.03
	7	Training	0.94	0.88	0.89	0.03
		Validation	0.77	0.59	0.59	0.06
		Testing	0.87	0.76	0.87	0.08
		Overall	0.92	0.85	0.87	0.04
	5	Training	0.92	0.85	0.85	0.04

Algorithm	Neurons	Stage	R	R²	Slope	MSE
		Validation	0.94	0.88	0.88	0.04
		Testing	0.86	0.74	0.86	0.07
		Overall	0.92	0.85	0.85	0.04
Resilient backpropagation	10	Training	0.95	0.90	0.90	0.03
		Validation	0.83	0.69	0.74	0.08
		Testing	0.78	0.61	0.69	0.07
		Overall	0.92	0.85	0.85	0.04
	7	Training	**0.95**	**0.90**	**0.90**	**0.02**
		Validation	**0.95**	**0.90**	**0.91**	**0.04**
		Testing	**0.93**	**0.86**	**0.97**	**0.04**
		Overall	**0.95**	**0.90**	**0.90**	**0.03**
	5	Training	0.94	0.88	0.85	0.03
		Validation	0.81	0.66	0.72	0.10
		Testing	0.93	0.86	0.93	0.03
		Overall	0.91	0.83	0.83	0.04
Scaled conjugate gradient	10	Training	0.95	0.90	0.91	0.02
		Validation	0.93	0.86	0.83	0.04
		Testing	0.91	0.83	0.84	0.04
		Overall	0.95	0.90	0.89	0.02
	7	Training	0.94	0.88	0.90	0.03
		Validation	0.92	0.85	0.72	0.04
		Testing	0.95	0.90	0.70	0.06
		Overall	0.94	0.88	0.84	0.03
	5	Training	0.93	0.86	0.87	0.03
		Validation	0.91	0.83	0.79	0.07
		Testing	0.91	0.83	1.00	0.07
		Overall	0.92	0.85	0.87	0.04

Table S3. Statistical results of the models developed using the supervised weight and bias algorithms. Numbers in red and italics represent the models with the lowest correlation and determination coefficients.

Algorithm	Neurons	Stage	R	R²	Slope	MSE
Batch training with weight and bias learning rate	10	Training	0.82	0.67	0.64	0.08
		Validation	0.85	0.72	0.56	0.12
		Testing	0.81	0.66	0.66	0.10
		Overall	0.81	0.66	0.61	0.05
	7	Training	*0.80*	*0.64*	*0.59*	*0.10*
		Validation	*0.67*	*0.45*	*0.49*	*0.13*
		Testing	*0.76*	*0.58*	*0.57*	*0.11*
		Overall	*0.76*	*0.58*	*0.57*	*0.06*
	5	Training	0.88	0.77	0.70	0.07
		Validation	0.79	0.62	0.66	0.09
		Testing	0.85	0.72	0.50	0.10
		Overall	0.85	0.72	0.65	0.04
Cyclical order weight and bias	10	Training	0.98	0.96	0.96	0.01
		Validation	0.82	0.67	0.85	0.09

		Testing	0.90	0.81	1.10	0.07
		Overall	0.94	0.88	0.96	0.03
	7	Training	0.98	0.96	0.96	0.01
		Validation	0.82	0.67	0.94	0.07
		Testing	0.89	0.79	0.82	0.05
		Overall	0.95	0.9	0.93	0.03
	5	Training	0.96	0.92	0.92	0.02
		Validation	0.75	0.56	0.67	0.05
		Testing	0.92	0.85	1.20	0.07
		Overall	0.93	0.86	0.95	0.03
Random order weight and bias	10	Training	0.89	0.79	0.82	0.06
		Validation	0.84	0.71	0.74	0.10
		Testing	0.88	0.77	1.10	0.06
		Overall	0.87	0.76	0.83	0.06
	7	Training	0.86	0.74	0.69	0.08
		Validation	0.81	0.66	0.69	0.09
		Testing	0.76	0.58	0.65	0.17
		Overall	0.83	0.69	0.67	0.05
	5	Training	0.86	0.74	0.69	0.07
		Validation	0.94	0.88	0.77	0.07
		Testing	0.76	0.58	0.76	0.06
		Overall	0.87	0.76	0.72	0.04
Sequential order weight and bias	10	Training	0.85	0.72	0.71	0.05
		Validation	-	-	-	-
		Testing	0.79	0.62	0.53	0.06
		Overall	0.83	0.69	0.66	0.05
	7	Training	0.81	0.66	0.58	0.05
		Validation	-	-	-	-
		Testing	0.92	0.85	0.97	0.05
		Overall	0.82	0.67	0.64	0.05
	5	Training	*0.74*	*0.55*	*0.48*	*0.05*
		Validation	*-*	*-*	*-*	*-*
		Testing	*0.73*	*0.53*	*0.56*	*0.04*
		Overall	*0.74*	*0.55*	*0.49*	*0.05*