**Blouch Systematic Biology Revision Milestones – 2023**

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Reprogramming Blouch for computation speed – split off programs into their component parts. Validation results for each model shown in Validation Results -2023 Word doc.

Milestone 1: Direct effect model from Hansen (1997) for V/CV matrix

* Tested for increasing half-life
* Tested for multiple predictors – blouchOU\_direct.stan
* Includes measurement error – blouchOU\_direct\_ME.stan

Milestone 2: Adaptation model

* Tested for increasing half-life
* Tested for multiple predictors – blouchOU\_adaptive.stan
* Includes measurement error – blouchOU\_adaptive\_ME.stan

Milestone 3: Combination of direct effect and adaptation model

* Tested for increasing half-life
* Tested for multiple predictors of both types- blouchOU\_direct\_adaptive.stan
* Includes measurement error - blouchOU\_direct\_adaptive\_ME.stan

Milestone 4: Regime model

* Tested for increasing half-life
* Tested for an increasing number of regimes - blouchOU\_reg.stan

Milestone 5: Regime model with direct effect predictors

* Tested for increasing half-life – blouchOU\_reg\_direct.stan
* Includes measurement error – blouchOU\_reg\_direct\_ME.stan

Milestone 6: Regime model with adaptative predictors

* Tested for increasing half-life – blouchOU\_reg\_adaptive.stan
* Includes measurement error – blouchOU\_reg\_adaptive\_ME.st

Milestone 7: Regime and combination of direct effect and adaptation model

* Tested for increasing half-life - blouchOU\_reg\_direct\_adaptive.stan
* Includes measurement error – blouchOU\_reg\_direct\_adaptive\_ME.stan

Milestone 8: Multilevel regime model

Milestone 9: Multilevel regime model with direct effect and adaptive predictors

Milestone 10: SIMMAP Regime model with non-centered priors

Milestone 11: SIMMAP Regime model with non-centered priors and direct and adaptive predictors

Milestone 12: Multi-SIMMAP Regime model with non-centered priors

Milestone 13: Multi-SIMMAP Regime model with non-centered priors

and direct and adaptive predictors