Template generation

Multi-modal acquisition
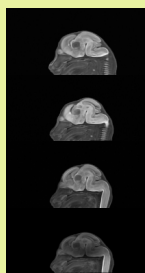
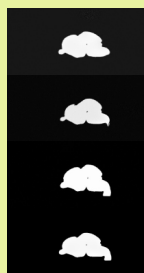**Modalities**

- LSFM
- FA
- DWI
- LSFM
- MTR
- ADC

Specimen 1

Specimen 2

Specimen 3

Specimen 4

Specimen 5

... Specimen *N*
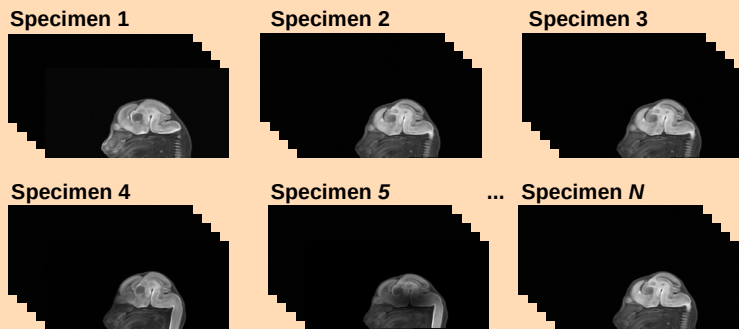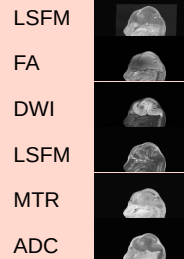
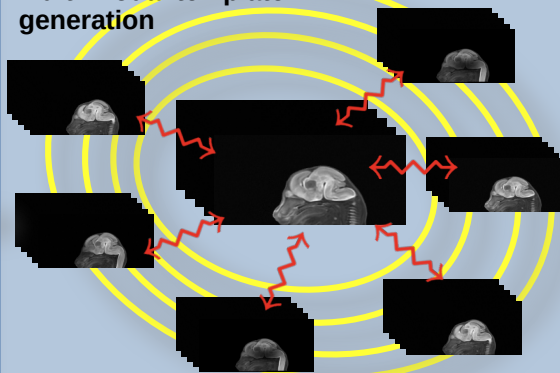* E15.5 illustrated

Preprocessing

N4 + denoise   **Brain extraction**

```
ants.n4_bias_field_correction
ants.denoise_image
antspynet.mouse_brain_extraction
```
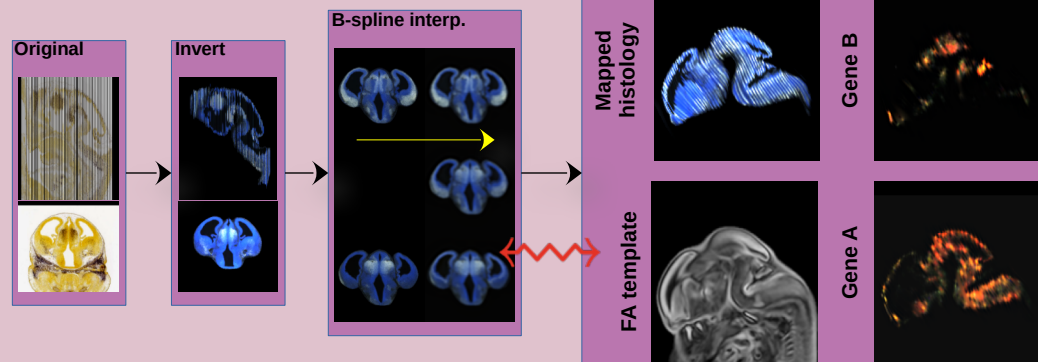
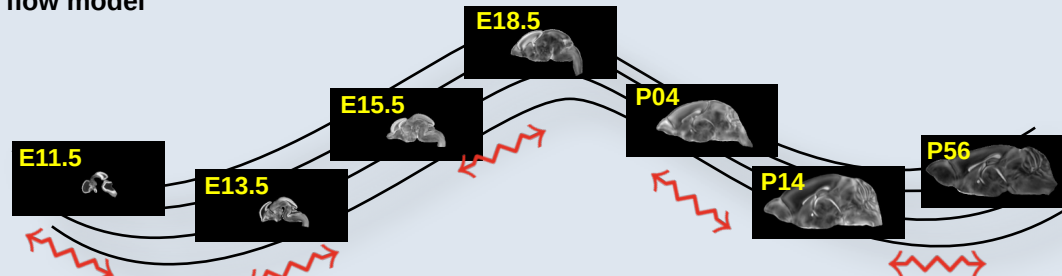## Multi-modal template generation

```
ants.build_template
```

Template-based applications

Template gene expression mapping

Original   **Invert**   **B-spline interp.**

Mapped histology

Gene B

FA template

Gene A

```
ants.registration
ants.apply_transforms
ants.fit_bspline_object_to_scattered_data
```

Developmental CCF velocity flow model

E11.5   E13.5   E15.5   E18.5   P04   P14   P56

```
ants.fit_time_varying_transform_to_point_sets
ants.integrate_velocity_field
```