

Creating a Customized Muscle Model

In this section, we will create a muscle model that characterizes fatigue. We will then adapt the example from Chapter 2 to use this new type of muscle model. The resulting source code and associated files for this example come with the OpenSim 3.0 distribution under the directory, e.g.:

```
C:\OpenSim 3.0\sdk\APIExamples\MuscleExample
```

When creating a new muscle model, you can start from scratch by deriving from the base class, `Muscle`, or you can alter an existing muscle model. In this example, we will add the effects of muscle fiber fatigue to `Millard2012EquilibriumMuscle`, but we could just as easily do this to other muscle models.

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- [Custom Muscle Model Part Two](#)

Muscle modeling overview

A muscle is defined by a path and a set of force-generating parameters. The path of a muscle is stored in a `GeometryPath` object owned by the base class, `Muscle`. The force-generating parameters are usually different for each type of muscle, so they are stored in the derived muscle classes. A muscle also typically has one or more states (though it can have zero) whose differential equations describe the force, length, and activation behavior of the muscle. `Millard2012EquilibriumMuscle` has 2 states.

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