Plot a life cycle diagram from a matrix model

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The exercise plots a life cycle with the stages and transitions of a give matrix chosen from the `comadre` (or `compadre`) database (or indeed elsewhere). It will use the R function `plotLifeCycle` from the `Mage` library. This function works well with matrices of relatively low dimensionality ($\sim< 7$), and where not many transitions are depicted.

```
library(Mage)
```

Let's plot the lifecycle described by the `A` matrix for a species containing the word "lion" in the common name used by the author(s) in the original source publiction.

First load the data:

```
load("COMADRE_v.1.0.0.RData")
```

To find the species with the word `lion` in their common name, we use the function `grep`.

```
lions <- grep("lion",comadre$metadata$CommonName)
unique(comadre$metadata$CommonName[lions])
```

```
> [1] "Common lionfish"
> [2] "Red lionfish"
> [3] "Northern sea lion; Steller sea lion"
> [4] "New Zealand sea lion"
> [5] "California sea lion"
```

Unfortunately, no actual lion (*Panthera leo*) has been included in this version of COMADRE, but there are plenty of other "lions" in it. We will plot the life cycle of the red lionfish (*Pterois volitans*):

```
matNum <- which(comadre$metadata$CommonName == "Red lionfish")
matNum
```

```
> [1] 151
```

```
sp <- gsub("_"," ",comadre$metadata$SpeciesAccepted[matNum])
sp
```

```
> [1] "Pterois volitans"
```

The matrix 'A' and the stages of this study are:

```
matA <- comadre$mat[[matNum]]$matA
matA
```

```
>         A1    A2     A3
> [1,] 0e+00 0.000 35.315
> [2,] 3e-05 0.777  0.000
> [3,] 0e+00 0.071  0.949
```

```
stages <- comadre$matrixClass[[matNum]]$MatrixClassAuthor
stages
```

```
> [1] "Larvae"                 "Juvenile (20 - 174 mm)"
> [3] "Adult (> 174 mm)"
```

To plot its lifecycle, use the function `plotLifeCycle.R` from the `Mage` package.

```
plotLifeCycle(matA, title = "Red lionfish")
```