

# Superimposing and Morphing

**Talk to a Teacher**

**<http://spoken-tutorial.org>**

**National Mission on Education through ICT**

**<http://sakshat.ac.in>**

**Snehalatha Kaliappan**

**IIT Bombay**

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# Learning Objectives



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- ▶ **Superimpose and compare different structures of the same protein**



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- ▶ **Morph conformations and create a trajectory**



# Pre-requisites



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- **Chimera interface**



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- ▶ <http://spoken-tutorial.org>



# System Requirement





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- ▶ **Ubuntu OS version 14.04**



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- ▶ **Mozilla firefox browser 42.0**
- ▶ **Working internet connection**



# Structural alignment



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- **Structural alignment is a tool to compare two or more protein structures**



# Structural alignment

- ▶ **Structural alignment is a tool to compare two or more protein structures**
- ▶ **The alignment is based on their shape and three-dimensional conformation**



# Morphing





# Morphing

- ▶ **Morphing** is calculating a series of intermediate structures between the original input structures



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- ▶ **Morphing** is calculating a series of intermediate structures between the original input structures
- ▶ The series of intermediate structures created can be saved as Molecular Dynamics Movie (MD Movie)



# Summary



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- ▶ **Superimpose and compare different structures of the same protein**
- ▶ **Morph conformations and create a trajectory**
- ▶ **Save the trajectory as Molecular Dynamics Movie (MD Movie)**



# Assignment



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- ▶ Open the structures of GTP binding proteins with pdb code: **1TAG and 1TND**
- ▶ Superimpose the structures using **MatchMaker** tool
- ▶ Using **Sequence Alignment** tool, find out the regions that are non-identical



# About the Spoken Tutorial Project

- ▶ Watch the video available at [http://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](http://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- ▶ It summarises the Spoken Tutorial project



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- ▶ It summarises the Spoken Tutorial project
- ▶ If you do not have good bandwidth, you can download and watch it





# Spoken Tutorial Workshops

## The Spoken Tutorial Project Team

- ▶ Conducts workshops using spoken tutorials
- ▶ Gives certificates to those who pass an online test
- ▶ For more details, please write to [contact@spoken-tutorial.org](mailto:contact@spoken-tutorial.org)



# Acknowledgements

- ▶ Spoken Tutorial Project is a part of the Talk to a Teacher project
- ▶ It is supported by the National Mission on Education through ICT, MHRD, Government of India
- ▶ More information on this Mission is available at

<http://spoken-tutorial.org/NMEICT-Intro>

