

Swiss Institute of  
Bioinformatics

# First steps with Python in life sciences

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# Course schedule

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## Day 1

- morning:**
- Introduction to Jupyter Notebook
  - Python basics: variables, functions and object types.
- afternoon:**
- Code flow: conditional statements (if... else), loops (while..., for ...) and functions.
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## Day 2

- morning:**
- Code flow: conditional statements (if... else), loops (while..., for ...) and functions.
- afternoon:**
- Reading / writing files.
  - Python modules: import and re-use existing code.
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## Day 3

### Additional modules :

- Biopython
- Numpy
- Scipy
- Matplotlib
- Pandas

# But first - getting to know you

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- Have you programmed before ? Which language ?
- Any experience with command line ?
- Why do you want to program :
  - to analyze data ?
  - to create scripts that serve as *glue* in my pipeline ?
  - to implement my cool new model ?
  - to become one of the cool kids ?
  - to have something to do on my Sundays ?

# What is Python ?

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“Python is an **interpreted, high-level, general-purpose** programming language.” wikipedia

- **Interpreted:** no compilation of the program prior to execution
  - + platform independence (portability), dynamic typing
  - - usually slower, buggy program may still run
- **High level:** abstracted from details of the machine (e.g. memory management)
  - + focus on the application itself
  - - possibly counter-intuitive behaviors (e.g. mutable vs. immutable objects).
- **General-purpose:** not domain specific, can be used in a broad range of software application
  - + wide user base, usable for any purpose
  - - core language fairly simple → modules for domain specific uses

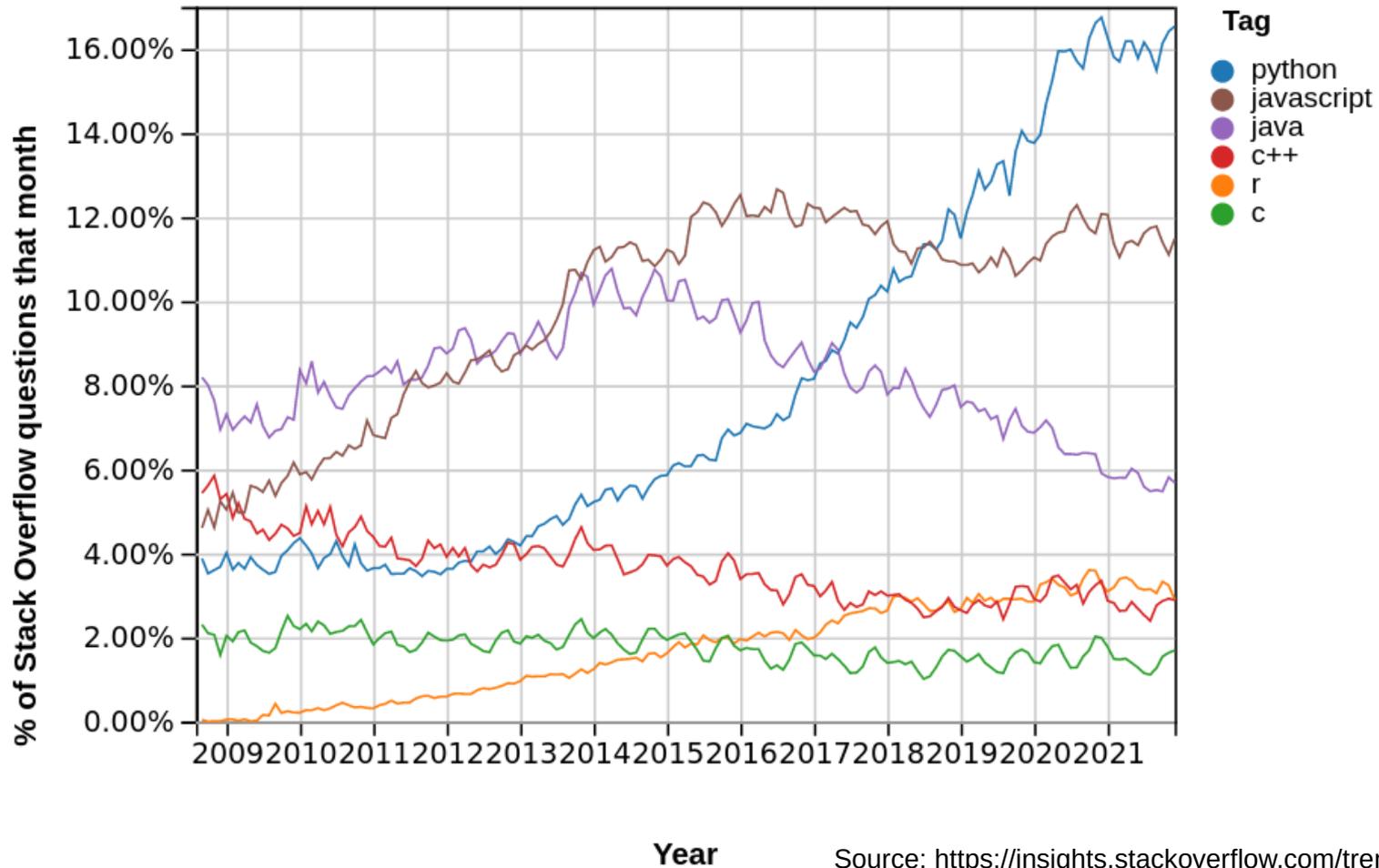
# Python - a brief history

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- **1991**: First version of Python (0.9.0) publicly released by Guido van Rossum.
  - Its name is a tribute to the British comedy group “Monty Python”, it later adopted the two snakes as logo symbol.
- **2000**: Python 2.0
- **2008**: Python 3.0 (backward incompatible with python2)
- **2015 2020** : end of Python 2.7 support
- **Current version** : 3.10 (as of February 2022)

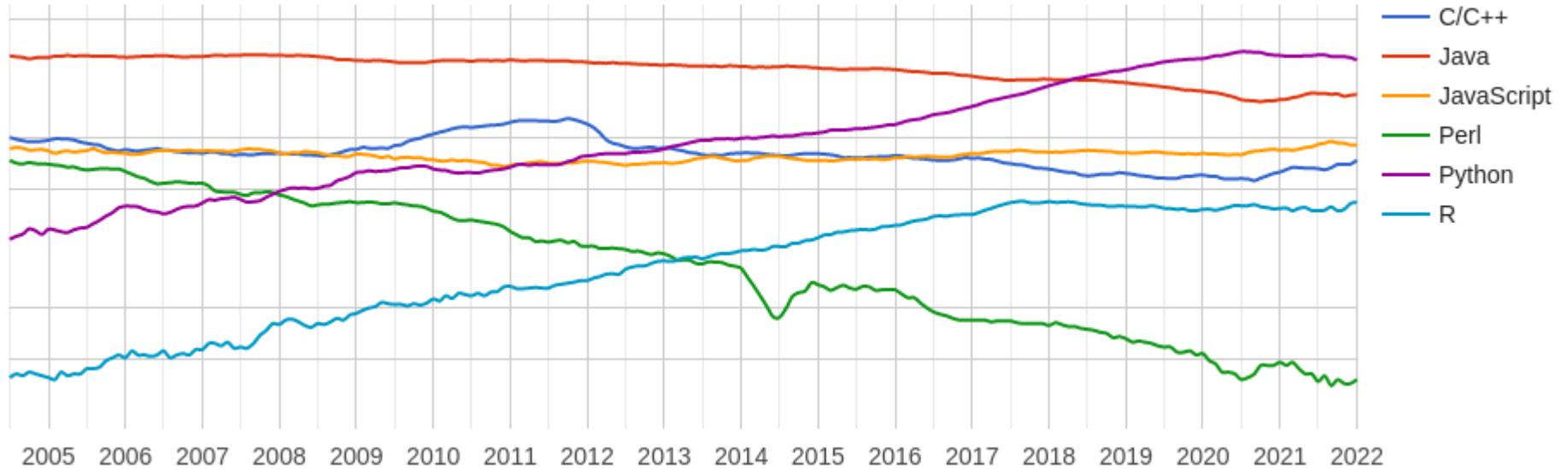


# Python - is it used ?



# Python - is it used ?

PYPL Popularity of Programming Language



# Python – sum up

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“Python is an interpreted, high-level, general-purpose programming language.” wikipedia

- Easy to learn - you will experience that first hand !
- Portable: coding for Windows, MacOS or Linux is (almost) the same.
- Broad range of applications: can be used for anything !
- Widely used, including in science application:
  - Huge community to get help/tutorials.
  - Huge number of modules for domain specific applications.

