



# Introduction to R

## R Foundations for Life Scientists

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# Briefly about R

## R is ...

- a programming language
- a programming platform (= environment + interpreter)
- a software project driven by the core team and the community
- a very powerful tool for statistical computing
- a very powerful computational tool in general
- a catalyst between an idea and its realization

## R is not ...

- a tool to replace a statistician
- the very best programming language
- the most elegant programming solution
- the most efficient programming language

## Yet ...

- it is very elegant
- it becomes more and more feature-rich



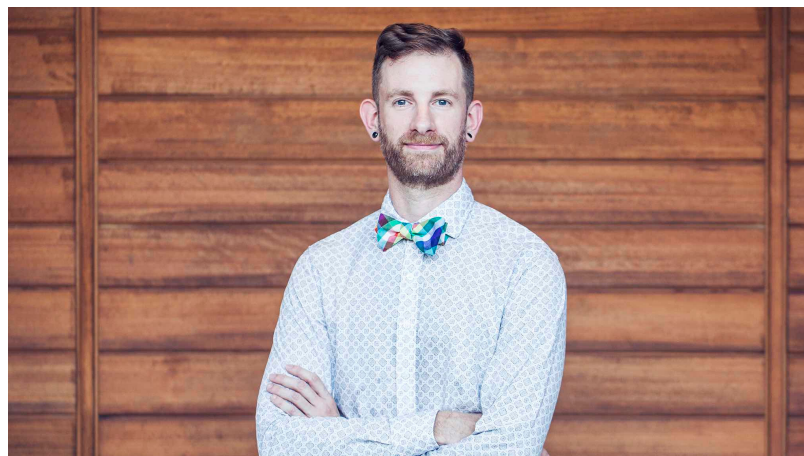
# Timeline



- ca. 1992 — conceived by **Robert Gentleman** and **Ross Ihaka** (R&R) at the University of Auckland, NZ as a tool for **teaching statistics**
- 1994 — initial version
- 2000 — stable version



- 2011 — **RStudio**, first release by J.J. Allaire



- ca. 2017 — Tidyverse by **Hadley Wickham**

# Ideas behind R

- open-source solution — fast development
- based on the **S language** created at the Bell Labs by **John Mc Kinley Chambers** to

*turn ideas into software, quickly and faithfully*

- **lexical scope** inspired by **Lisp** syntax
- since 1997 developed by the R Development Core Team (ca. 20 experts, with Chambers onboard; 6 are active)
- overviewed by **The R Foundation for Statistical Computing**

# Packages

- developed by the community
- cover several very diverse areas of science/life
- uniformly structured and documented
- organised in repositories:
  - CRAN
  - R-Forge
  - Bioconductor
  - GitHub



# Pros and cons

- ▣ steep learning curve
- ✚ uniform, clear and clean system of documentation and help
- ▣ difficulties due to a limited object-oriented programming capabilities, e.g. an agent-based simulation is a challenge
- ✚ good interconnectivity with compiled languages like Java or C
- ▣ cannot order a pizza for you (?)
- ✚ a very powerful ecosystem of packages
- ✚ free and open source, GNU GPL and GNU GPL 2.0
- ✚ easy to generate high quality graphics

Thank you! Questions?

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