Classes, Styles, Conflicts
Didier Verna
Analogies
Morphological
Functional
GeneTEX Material
Infection
Methods
Types
Cures
Vaccines
Anti-viral Agents
Curative Infections
Conclusion

Classes, Styles, Conflicts

The Biological Realm of LaTeX

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The class / styles conflicts nightmare

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- **Classes**
  - *CurVe*, QCM
- **Styles**
  - FiXme, *FiNK*, QCM, DoX, LstBlocks (soon)
- **Documents!**

- Paradoxical situation: “If it ain’t broke, then fix it”

The birth of a baby document
A miracle of nature

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- When it doesn't work, you don't really know why
- When it does work, you *really* don't know why

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Morphological Analogy

A unicellular eukaryote LaTeX document

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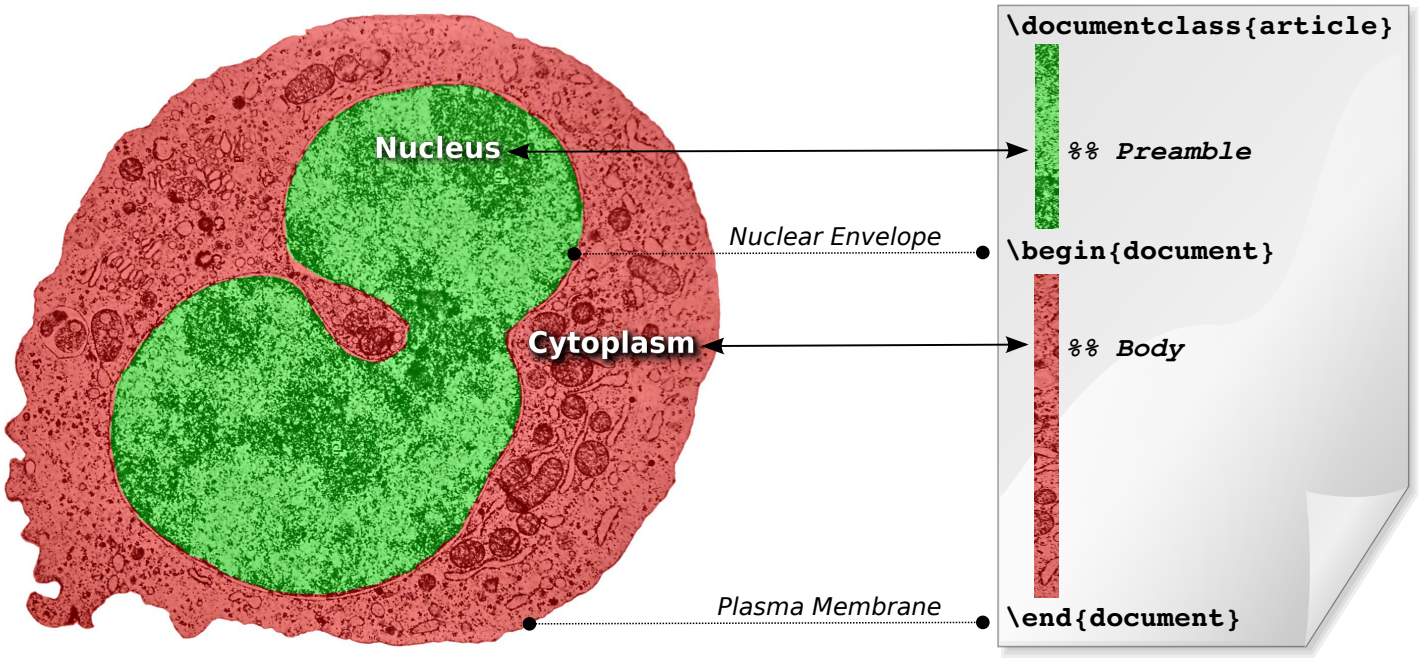

Functional Analogy

Genetic *vs.* programmatic material

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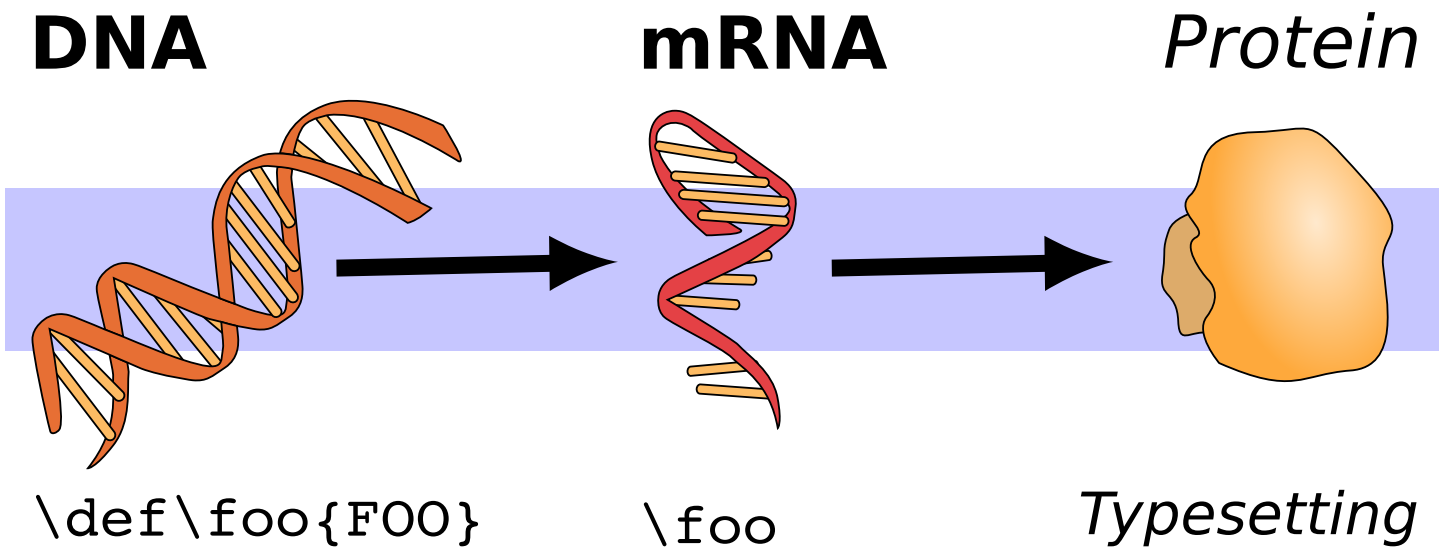

GeneTEX Material

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- **Original genome $\Longleftrightarrow$ document class**
- **Viruses $\Longleftrightarrow$ styles**
  - Contribute some geneTEX material
  - Need to infect a host
  - Relatively small compared to their host TEXLive 2009:
    - 2462 styles, 327 LoC (av.)
    - *mamastyle*: texshade (14470 LoC)
    - *mimistyle*: xq (24535 LoC)

Infection Methods

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- **Exogenic**
  - Majority of viral infections
  - `\usepackage` in a document
- **Endogenic**
  - 5 – 8% of our own genetic pool (retro-viruses)
  - `\RequirePackage` in a class
  - TEXLive 2009: 95% classes have 4 (av.) endogenic infections
- **Endosymbiosis**
  - *e.g.* mitochondria $\Longleftarrow$ former prokaryotes
  - LATEX needs more! (DoX $\not\in$ Doc, key/value processing)
- **Stylophages**
  - Style / style infection via `\RequirePackage`
    - TEXLive 2009: 45% styles infected by 2 (av.) styles
  - *Virophage* (Raoult 2008): infects the Mimivirus

Infection Types

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- **Prostyles**
  - GeneTEX material incorporated into the host's
  - Wide range of effects
  - *e.g.* *FiNK* (`\InputIfFileExists`), Hyperref
  - `\let\@ldfoo\foo\def\foo{...\@ldfoo ...}` `\renewcommand` *etc.*
- **Satellites**
  - Delta virus (HDV) over HBV
  - DoX, Graphicx *etc.*
- **Host-dependent**
  - Rely on the host instead of another virus
  - *e.g.* Beamer themes
- **Cheaters**
  - Competition instead of cooperation
  - *e.g.* *Umbravirus* steals coat protein from *Luteovirus*
  - LstBlocks (steals from Verbatim)

Cures

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- **Handling viral infections**
  - Prevention
  - Vaccines
  - Anti-viral agents
- **Prevention in the LaTeX biotope**
  - *by documentation*
  - FiXme: officially supports standard classes and KOMA
  - Hyperref's README file

  There are too many problems with varioref. Nobody has time to sort them out. Therefore this package is now unsupported.

Adaptive Immune Systems I

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- **Adaptive Immunity**
  - Acquisition of defenses against a pathogen
  - **Immunological memory**: history of previously encountered infections
  - **Active immunological memory**: long-term
    - Naturally acquired: mumps, measles *etc.*
    - Artificially acquired: vaccines
- **Adaptive immunity in the LaTeX biotope**
  - Scenario
    1. Class C + style S $\Longrightarrow$ bug
    2. Bug report
    3. New version of class C or style S

Adaptive Immune Systems II

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- **New version of C**
  - Acquired immunity
  - `\@ifpackageloaded`
  - TEXLive 2009
    - 13% classes have an active immune system against 2 (av.) styles
- **New version of S**
  - *viral tropism*
  - `\@ifclassloaded`
  - FiXme: tropism of 8 classes
  - Note: no `\@ifpackageloaded` $\Longrightarrow$ “isotropic style”

Antiviral Agents

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- **In biology**
  - Molecules targeted towards specific infections
  - Organism not prepared in advance
  - No immunological memory
- **In LaTeX** (anti-style agents)
  - Section 6 of the Hyperref manual!
  - ```
    \makeatletter
    \let\saved@bibitem\@bibitem
    \makeatother
    %% And then later:
    \begin{verbatim}
    \begingroup
    \makeatletter
    \let\@bibitem\saved@bibitem
    \nobibliography{database}
    \endgroup
    ```
    ```

Curative Infections

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- `\@ifpackageloaded` from *styles*
  - TEXLive 2009: 8% styles
  - Minitoc: aware of 30 other packages
  - LstBlocks: curative style
- **Anti-viral viruses ?**
  - Mice: natural protection against *Friend*
  - Gene *Fv1*
  - 1992: endogenic retro-viral origin

Conclusion (?)

- Drawing bridges between unrelated domains
- *Behavioral* patterns (Cf. Design Patterns)
- Probably only scratched the surface
- Beyond LaTeX: M4, Lisp ...

- Too much intercession $\Longrightarrow$ things are *out of control*

Questions ?

Please don't ;-)

- **The first oncogenic style ever:**
  - Recently discovered in the ventilation system of the Sir Francis Drake Hotel
  - First strain

```
\ProvidesPackage{oncogenic}[2010/06/28 v1.0 TUG Virus]
\expandafter\let%
  \csname ver@oncogenic.sty\endcsname\relax
\RequirePackage{oncogenic}
```

  - Second strain (after mutation)

```
\ProvidesPackage{oncogenic}[2010/06/29 v2.0 TUG Virus]
\def\@ifl@aded#1#2{\expandafter\@secondoftwo}
\RequirePackage{oncogenic}
```