

Automated modeling workflow with **LaTeX** using the new Pfizer Report Tool

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What is the Pfizer Report Tool?

The new Pfizer Report Tool is a customized setup of LaTeX, the golden standard of typesetting complex scientific documents. Combined with ePharmacology (ePharm), a pharmacometrics application environment and file database designed by Pfizer Clinical Pharmacology, it allows for seamless creation of large scientific documents with hundreds of figures, tables, etc. without copying and pasting. Below is an example of use, showing the source code (user input) and resulting PDF document.

Source code

```
\section{RESULTS}

\subsection{Model Performance and Parameters}

This is a cross reference to \cref{fig:vpc}.
This is a cross reference to \cref{tab:runs}.

\pmxfigure
{RA10907471}          % artifact ID
{fig:vpc}            % cross reference key
{Visual predictive check}
{Visual predictive check of model}
{scale=1}

\pmxtable
{RA10896062}        % artifact ID
{\texcomma}         % delimiter of text table
{Llllll}           % column justification
{tab:runs} % cross reference key
{NONMEM run log}
{NONMEM run log with parameters.}

References:
\cite{Ansari1975,Perry1982,DeLong1990}.
```

What does the tool offer over conventional word processing?

The Pfizer Report Tool system allows creation of a submission-ready PDF document directly from model output figures, spreadsheet tables, delimiter-separated text tables, etc. These files are automatically loaded from ePharm in their latest version created by the user, simply by inputting the artifact ID of the file as shown in the example above. Formatting is taken care of automatically according to a predefined template; the user needs only provide the contents. Submission-ready standards are built into the tool so the resulting PDF file is fully compliant with regulatory expectations. Numbering of and references to sections, figures, tables, etc. is automatically updated as the document is written, and citations are loaded directly from e.g. Google Scholar or Medline using the LaTeX-based reference manager JabRef. The time required to create the report is reduced from weeks to days, and updating it to a matter of minutes or hours. This saves crucial time especially if rework is required in the final stages before a regulatory submission. No prior knowledge of LaTeX and only a few hours of training is required to start using the report tool.

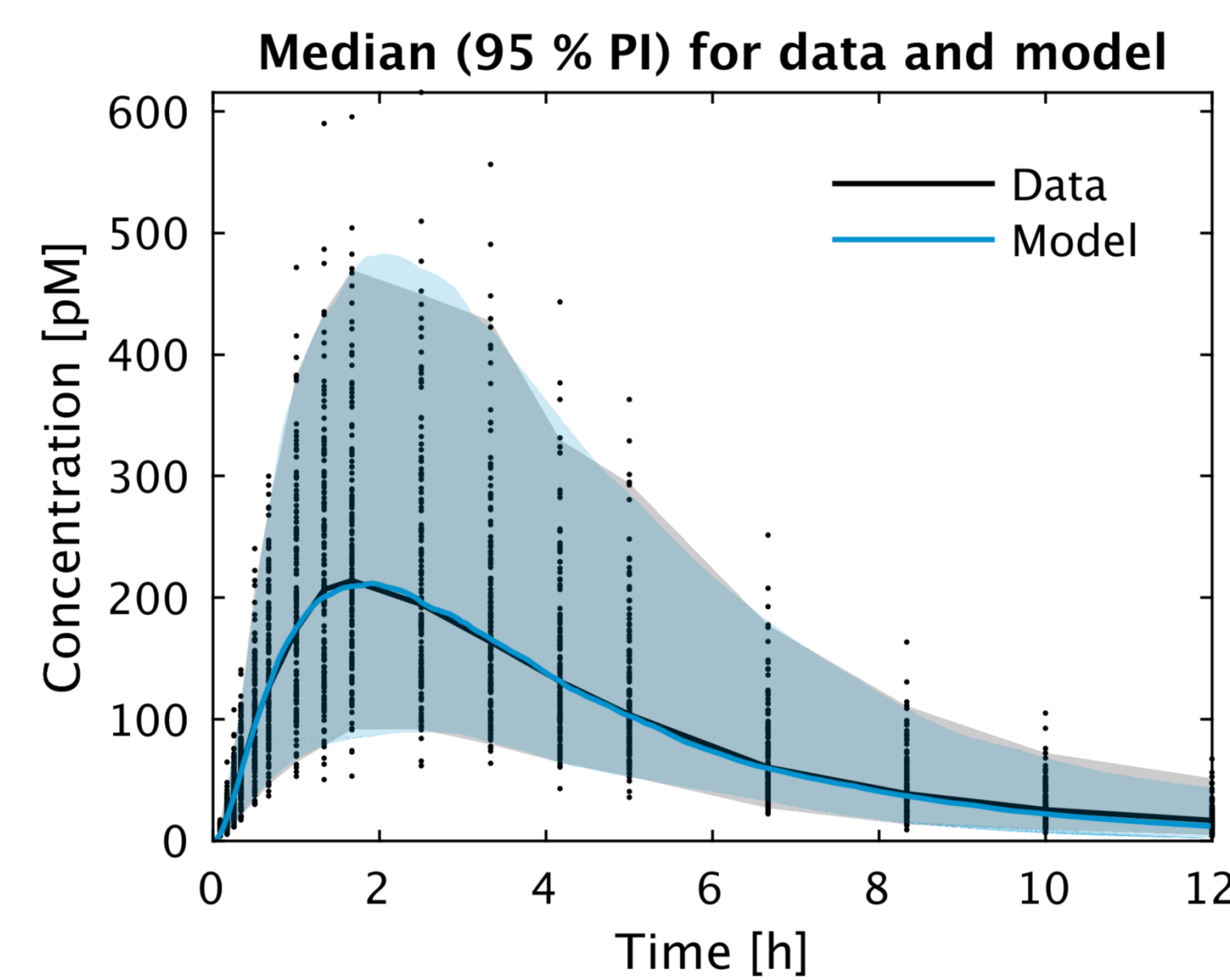
PDF output

1. RESULTS

1.1. Model Performance and Parameters

This is a cross reference to [Figure 1](#). This is a cross reference to [Table 1](#).

Figure 1. Visual predictive check



ePharmacology artifact ID [RA10907471](#).

Visual predictive check of model

Table 1. NONMEM run log

Step	Run 2	Run 3	Run 4	Run 5	Run 6
Folder	RF861091	RF861094	RF861095	RF861096	RF861100
Description	Base model	Comb. error	WGT on V	SUB on KE	STUD on KA
θ_{KD} [min^{-1}]	0.00523	0.00529	0.00533	0.00529	0.00526
θ_{KA} [min^{-1}]	0.0171	0.0174	0.0172	0.0174	0.0154
θ_{KE} [min^{-1}]	0.0904	0.0843	0.0851	0.100	0.0987
θ_V [L]	14.7	15.6	15.1	15.2	15.3
θ_{KESUB} [#]				0.576	0.598
θ_{KASTUD} [#]					1.36
ω_{VARKD} [min^{-2}]	0.0736	0.0805	0.0866	0.0811	0.0824
ω_{VARKA} [min^{-2}]	0.0738	0.0669	0.0725	0.0566	0.0346
ω_{VARKE} [min^{-2}]	0.158	0.127	0.120	0.0565	0.0547
ω_{VARV} [L^2]	0.0978	0.0686	0.0330	0.0393	0.0387
σ_{PROP} [#]	0.0207	0.00364	0.00365	0.00364	0.00364
σ_{ADD} [pM]		4.41	4.46	4.44	4.46
OFV	14821.7	12950.5	12902.7	12781.6	12726.2
Δ OFV		-1871.2	-47.7	-121.2	-55.4

ePharmacology artifact ID [RA10896062](#).

NONMEM run log with parameters.

References: [\[1, 2, 3\]](#).

2. REFERENCES

- [1] Ansari K and Johnson A, 1975, Olfactory function in patients with parkinson's disease. *J Chronic Dis* **28**: 493–497.
- [2] Perry TL, Godin DV and Hansen S, 1982, Parkinson's disease: a disorder due to nigral glutathione deficiency? *Neurosci Lett* **33**: 305–310.
- [3] DeLong MR, 1990, Primate models of movement disorders of basal ganglia origin. *Trends Neurosci* **13**: 281–285.

Conclusions

The Pfizer Report Tool has had a major impact on the way Clinical Pharmacology and Pharmacometrics documents are created. The process is now completely reproducible, much faster, and the documents can quickly and easily be updated when needed. Drastic savings in time and resources have resulted from users changing from conventional word processing to the LaTeX-based tool.

Acknowledgements

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