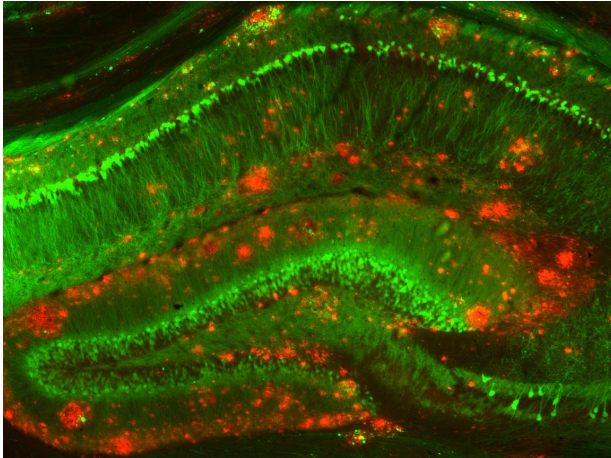


AmyloGram 2.0: MBO in the prediction of amyloid proteins

Dominik Rafacz

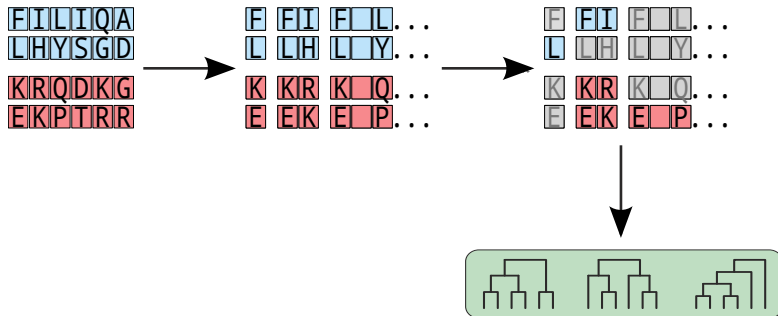
Warsaw University of Technology

Amyloidogenic proteins



Amyloid aggregates (red) around neurons (green). Strittmatter Laboratory, Yale University.

AmyloGram - n-grams analysis



Example 1-grams: A, L, G

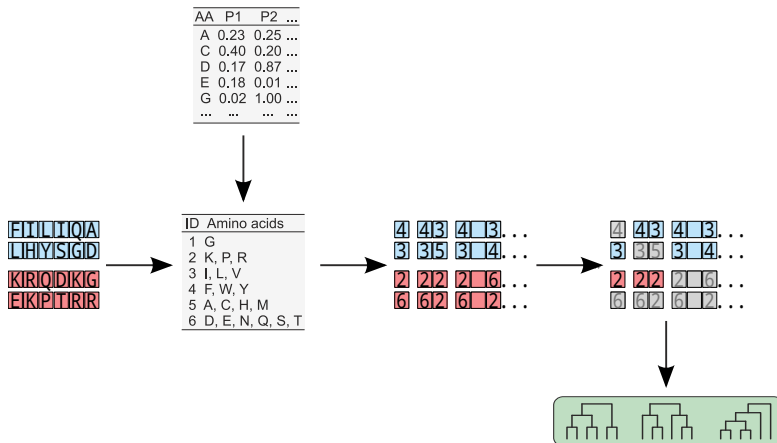
Example 2-grams: AL, MM, MY

Example 2-grams (with a gap): A-L, M-M, M-Y

Burdukiewicz, M., Sobczyk, P., Rödiger, S., Duda-Madej, A., Mackiewicz, P., and Kotulska, M. (2017).

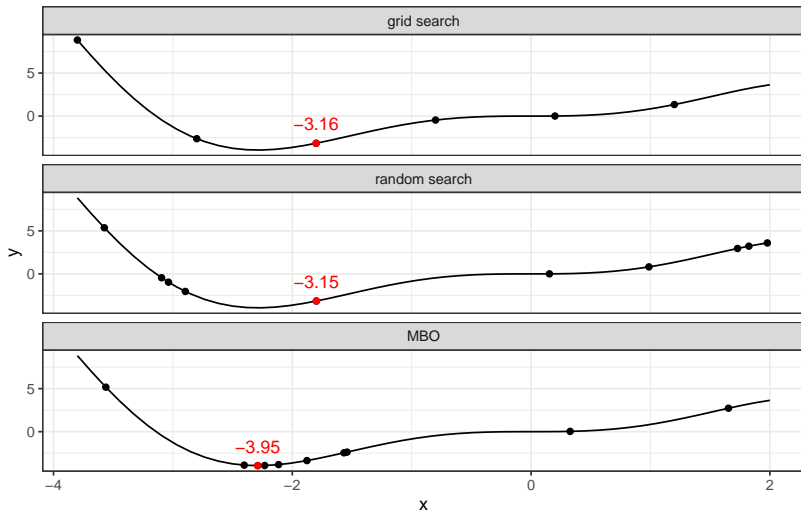
Amyloidogenic motifs revealed by n-gram analysis. Scientific Reports 7, 12961

AmyloGram - alphabet reduction



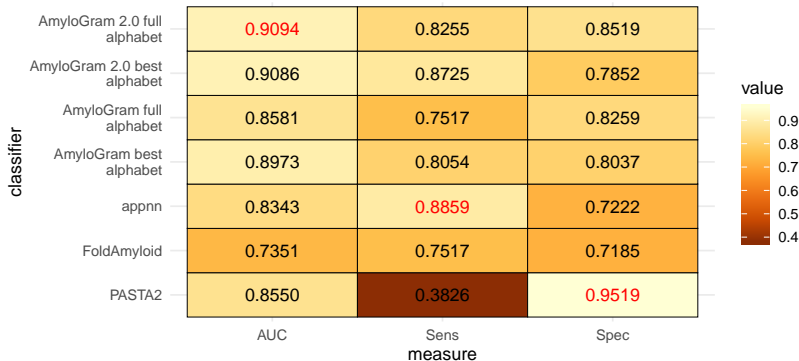
Burdukiewicz, M., Sobczyk, P., Rödiger, S., Duda-Madej, A., Mackiewicz, P., and Kotulska, M. (2017). Amyloidogenic motifs revealed by n-gram analysis. *Scientific Reports* 7, 12961

MBO



Results

Scores of classifiers



Features used in the model in the original AmyloGram: **262**

Features used in the model with full alphabet: **33620**

Features used in the model with best alphabet: **1014**

Acknowledgements & references

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Richter, J., Bossek, J., Horn, D., Thomas, J. and Lang, M. (2017). mlrMBO: A Modular Framework for Model-Based Optimization of Expensive Black-Box Functions.