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### ACCEPTED MANUSCRIPT

## Protein Secondary Structure Prediction: A Survey of the state of the art

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Graphical abstract

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Primary Structure

Ilmflitmli lvtannlfql figwegvgim mysntwefqq mfmlnyhpdm

Protein secondary structure prediction models

Probabili stric is graphical model

Secondary Structure

Ensemble methods

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14 15

#### Highlights:

- 1. The background and related knowledge of protein secondary structure prediction is introduced.
- 16 2. The often-used prediction accuracy assessments methods are described.
- The recent algorithmic developments of protein secondary structure prediction are reported in detail.
- 19 4. The corresponding tendencies and challenges are summarizes.
- 20 5. We conclude there are still further improvements and extensions in this field.

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Abstract: Protein secondary structure prediction (PSSP) is a fundamental task in protein science and computational biology, and it can be used to understand protein 3-dimensional (3-D) structures, further,

to learn their biological functions. In the past decade, a large number of methods have been proposed

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