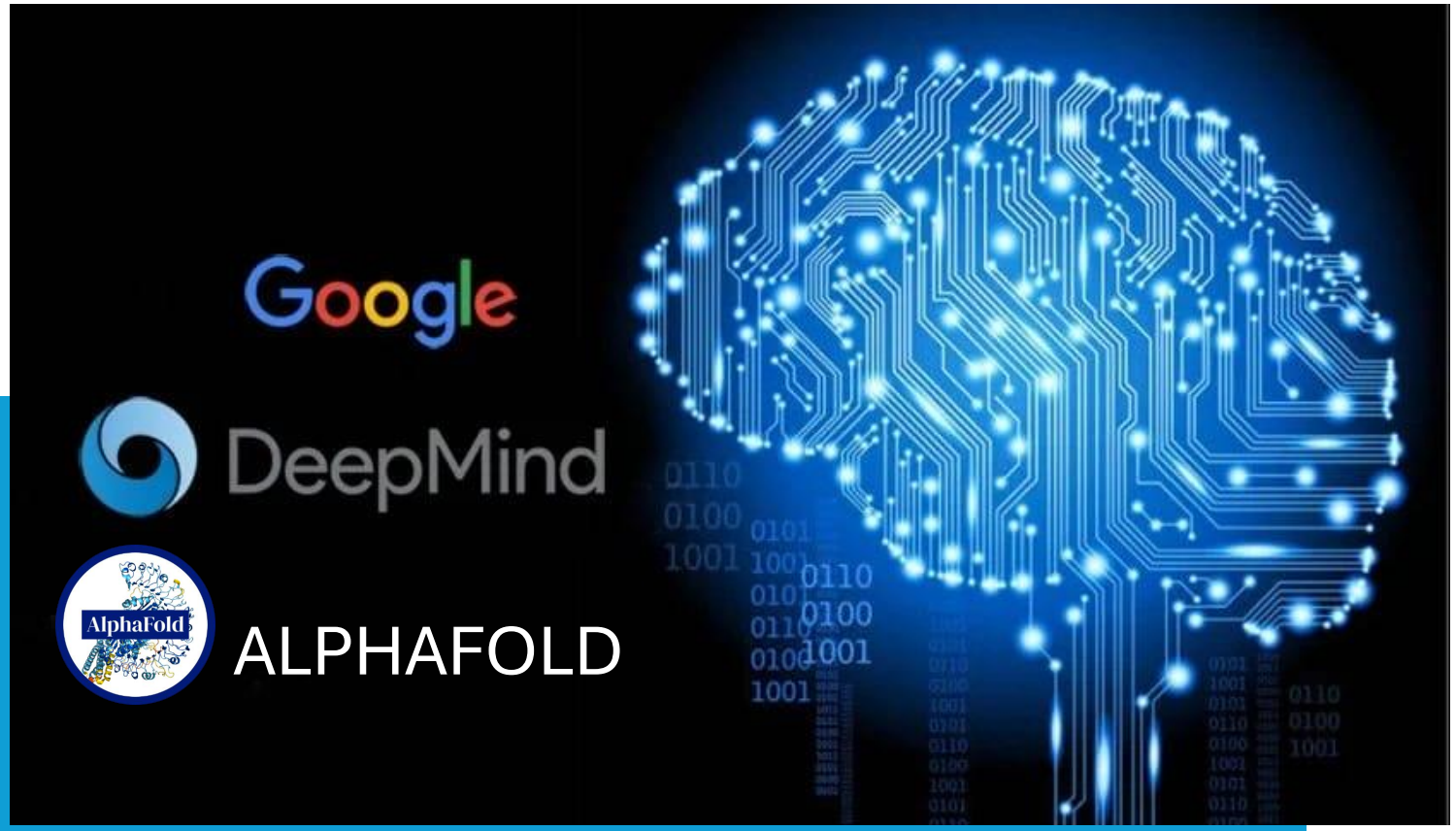


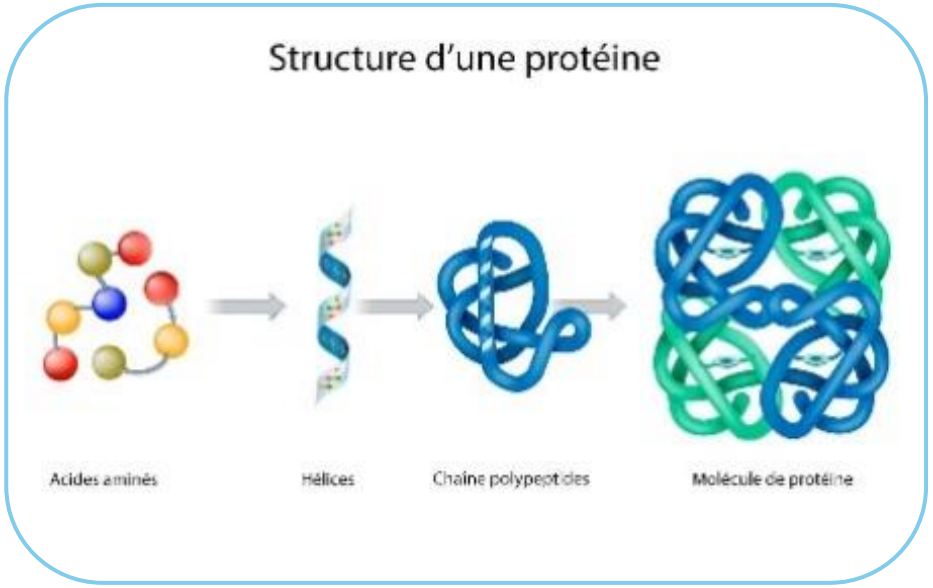
ALPHAFOLD OR HOW BIG TECH CAN USE AI TO SAVE LIFE ?

- Presentation
- How does it work ?
- What about the impact ?

PRESENTATION OF ALPHAFOLD

- Created in 2018
- By Google DeepMind (R&D Lab of Google)
- Using of AI to predict 3D structure of proteins from their amino acid sequences.

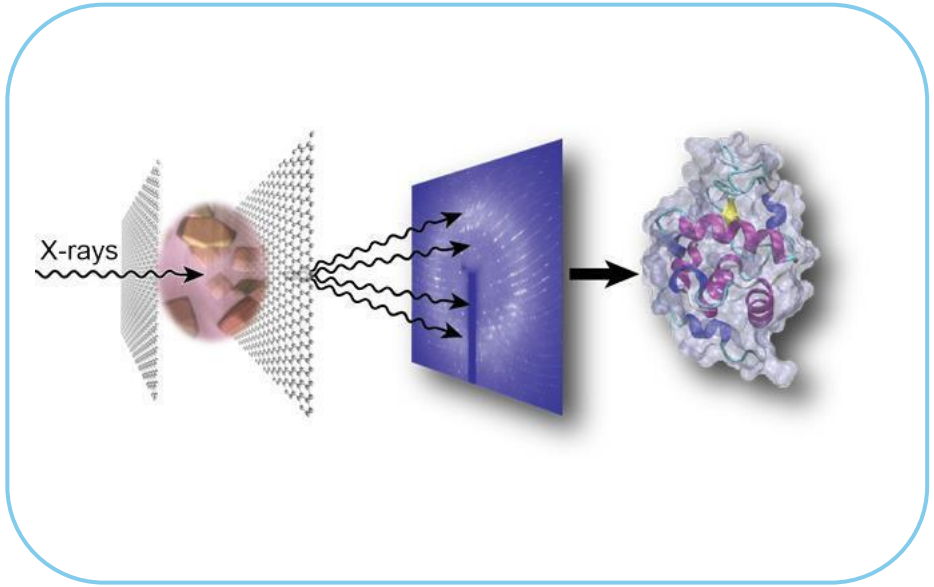
Source : https://fr.wikipedia.org/wiki/Google_DeepMind



WHY IS IMPORTANT TO WORK ON THIS ?

- Proteins are formed from amino acid sequences.
- Proteins are in all organisms such as animals, vegetables, human being.
- Understanding the working of proteins will enhance to improve people life

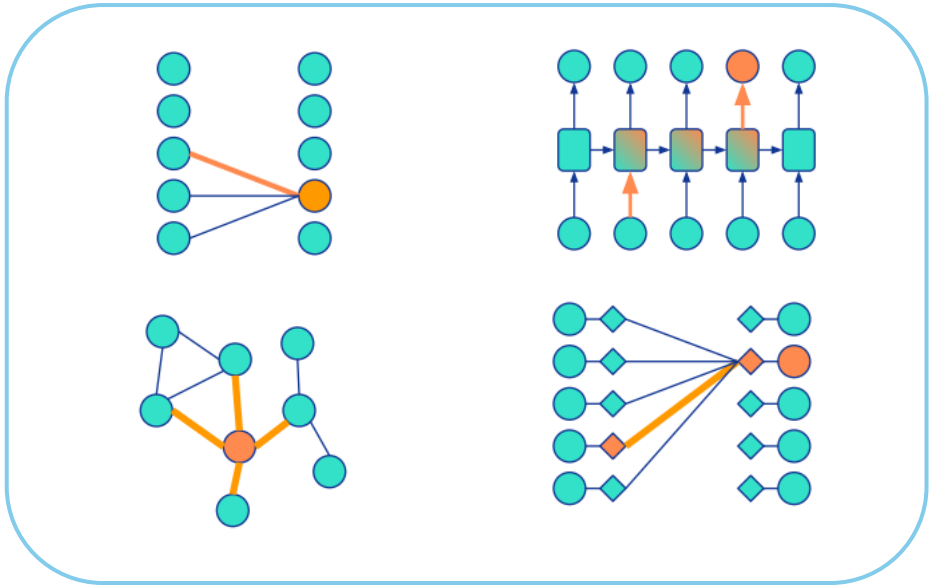
Source https://www.dravelnutrition.fr/whey-proteine-structure-d-une-proteine



Source : La_cristallographie_des_protéines_cea

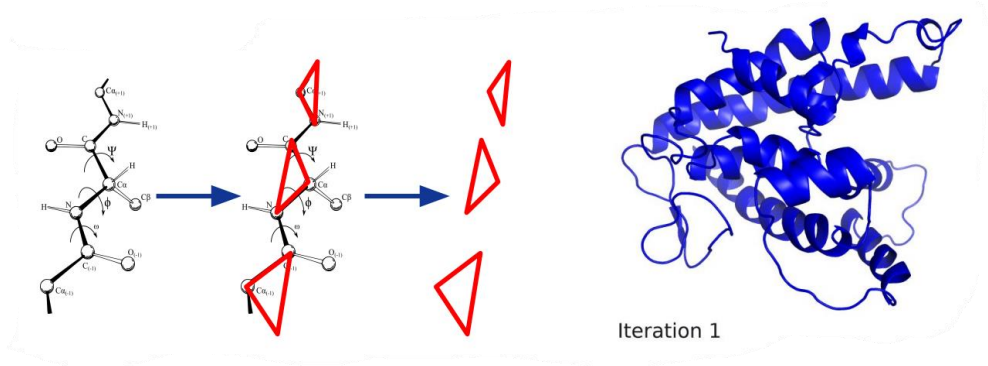
CONVENTIONAL METHOD IN RESEARCH COMMUNITY

- Use of experimental methods such as Crystallography.
- Methods considered too expensive, too long to implement, in certain cases ineffective.



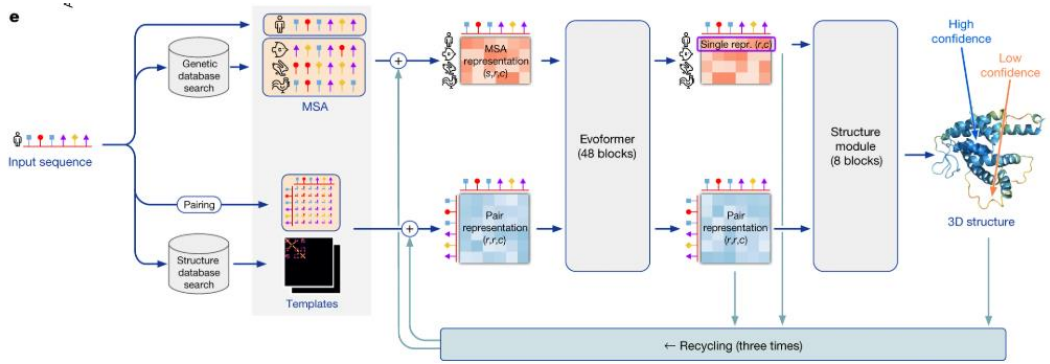
ALPHAFOLD : AN ALTERNATIVE

- Use of several artificial intelligence techniques to overcome these limits
- A considerable saving of time (From months to minutes)
- Significant savings



SUMMARY OF PROCESS

- Amino acid sequences as input
- Prediction of structure (distances and angles) thanks to neural network and transformers
- Comparison between predicted structure and the actual structure.



COMPLETE PROCESS

- Paper of [Evans and al, 2021, Protein complex prediction with AlphaFold] to get all information

BENEFITS

For examples :

- develop new medecins against malaria
- Improve drug formulas and vaccines
- Contribute to research on detection Parkinson’s diseases

Google DeepMind

AlphaFold