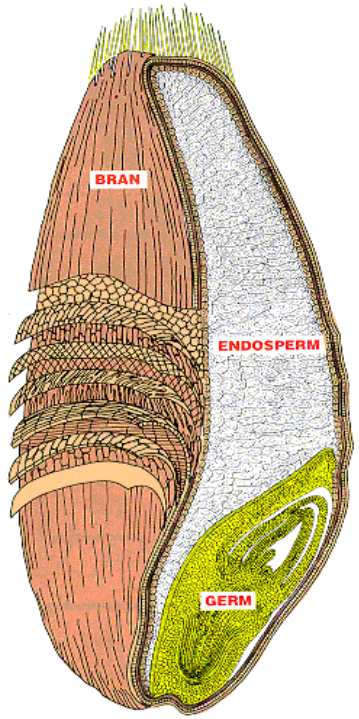
Gluten 101

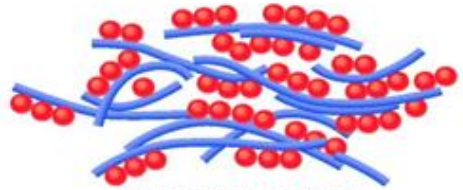
Flour

- Made from wheat which is mainly composed of protein (10-15%) and starch (65-75%)
- Provides structure for bakery products
  - Like building a house→ the protein acts as the framework, the starch fills in like drywall/plaster
- 2 major categories of wheat:
  - Soft wheat→
    - Lower protein content (9-10%)
    - Weaker nature of the protein
    - Used for cakes, pastry, biscuits, pies, crackers, etc.
  - Hard wheat→
    - Higher quantity and quality of protein (12-14%)
    - Used for bread, buns, rolls, bagel, pretzel, etc.
- Refined- or white- flour separates the bran and the germ from the endosperm
- Whole wheat flour grinds the whole wheat kernel including the bran and the germ

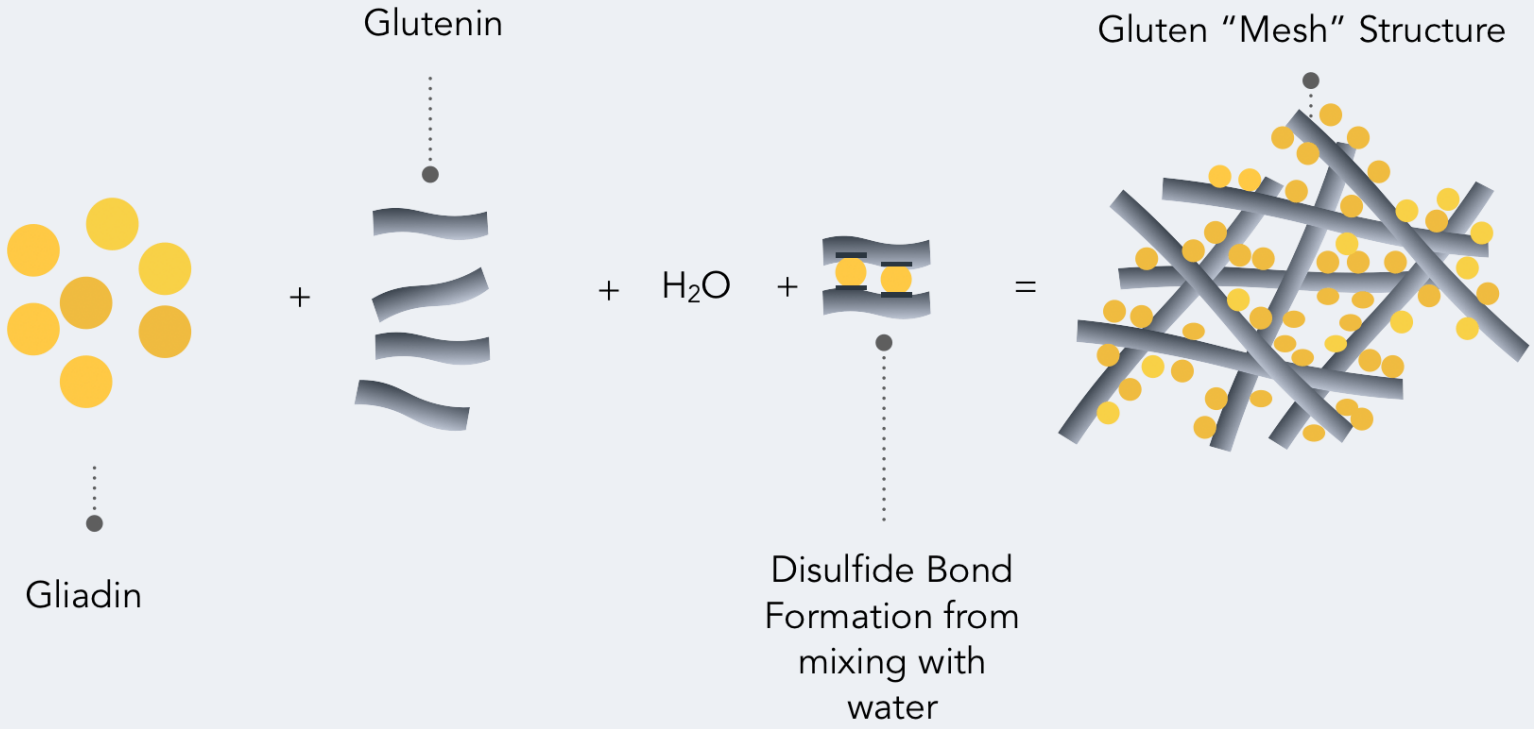


Gluten

- A protein naturally occurring in wheat and other grains
- Made of 2 building blocks→ glutenin and gliadin
- As dough is mixed, glutenin and gliadin are stretched, untangled, and overlapped to form bonds that will create a gluten protein network.
- The gluten protein network is then able to trap gas bubbles to help your bread rise and maintain shape.
- That's why gluten free bread often requires gums or other stabilizers to mimic the rise and texture of gluten.



What is Gluten?



Application

- Protein content and gluten development can have drastic impacts on the final texture of baked goods
- Bread→ dense, chewy structure
    - Need flour with high protein content to entrap the carbon dioxide produced by yeast cells during fermentation
- Cakes/Pastries→ light, airy structure
    - Need flour with very little protein content since structure comes from emulsifiers, lamination, starch gelatinization, etc. rather than gluten development