

Chemical Energy and ATP

Chapter 4.1

Chemical Energy

- Stored in the bonds of organic molecules
- Carbohydrates and lipids

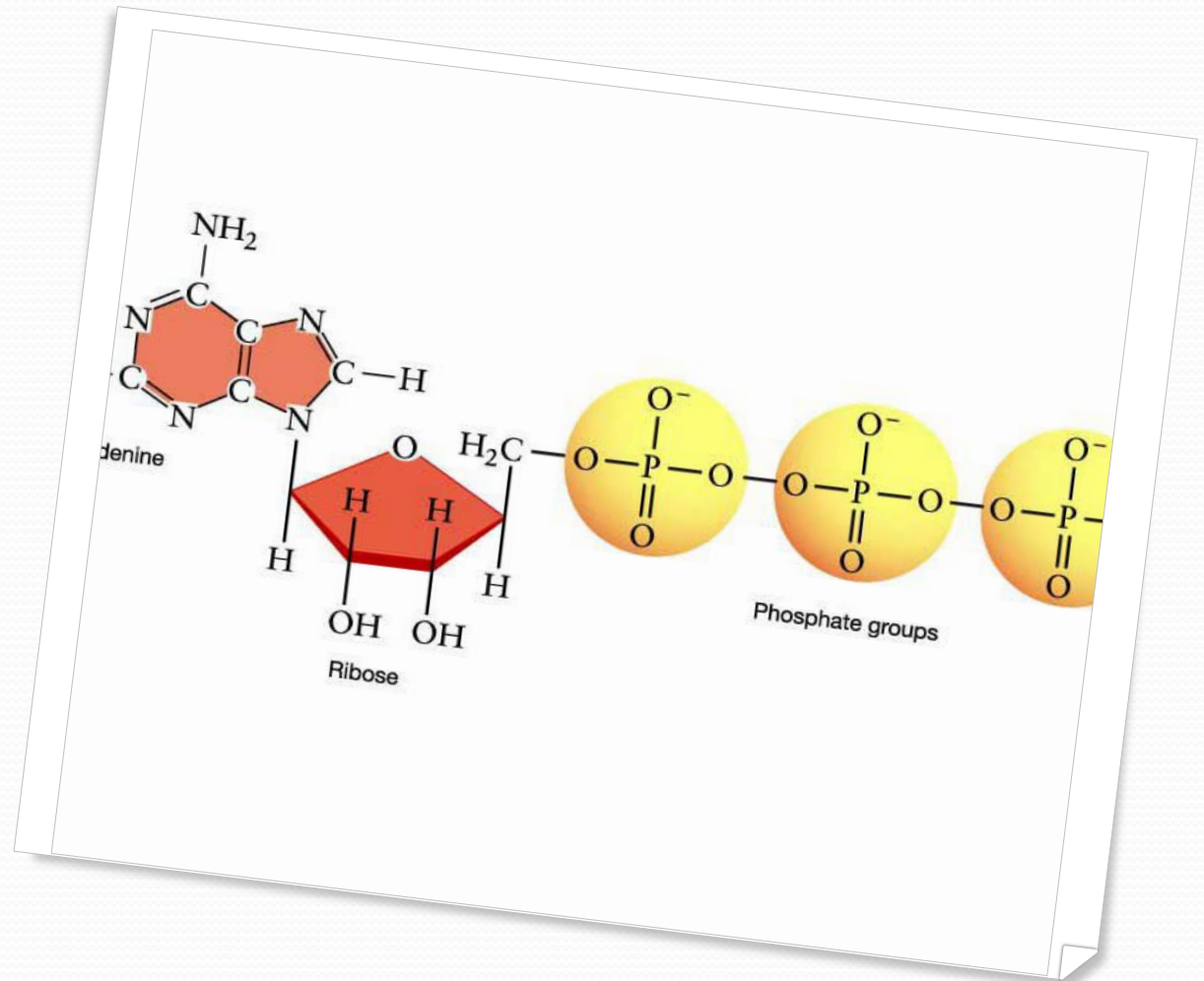
ATP molecule

- Adenosine Triphosphate
 - Transfers energy by breaking bonds
 - Energy released when a phosphate is removed

ATP – Adenosine
= ribose +
adenine

Triphosphate = 3
phosphates

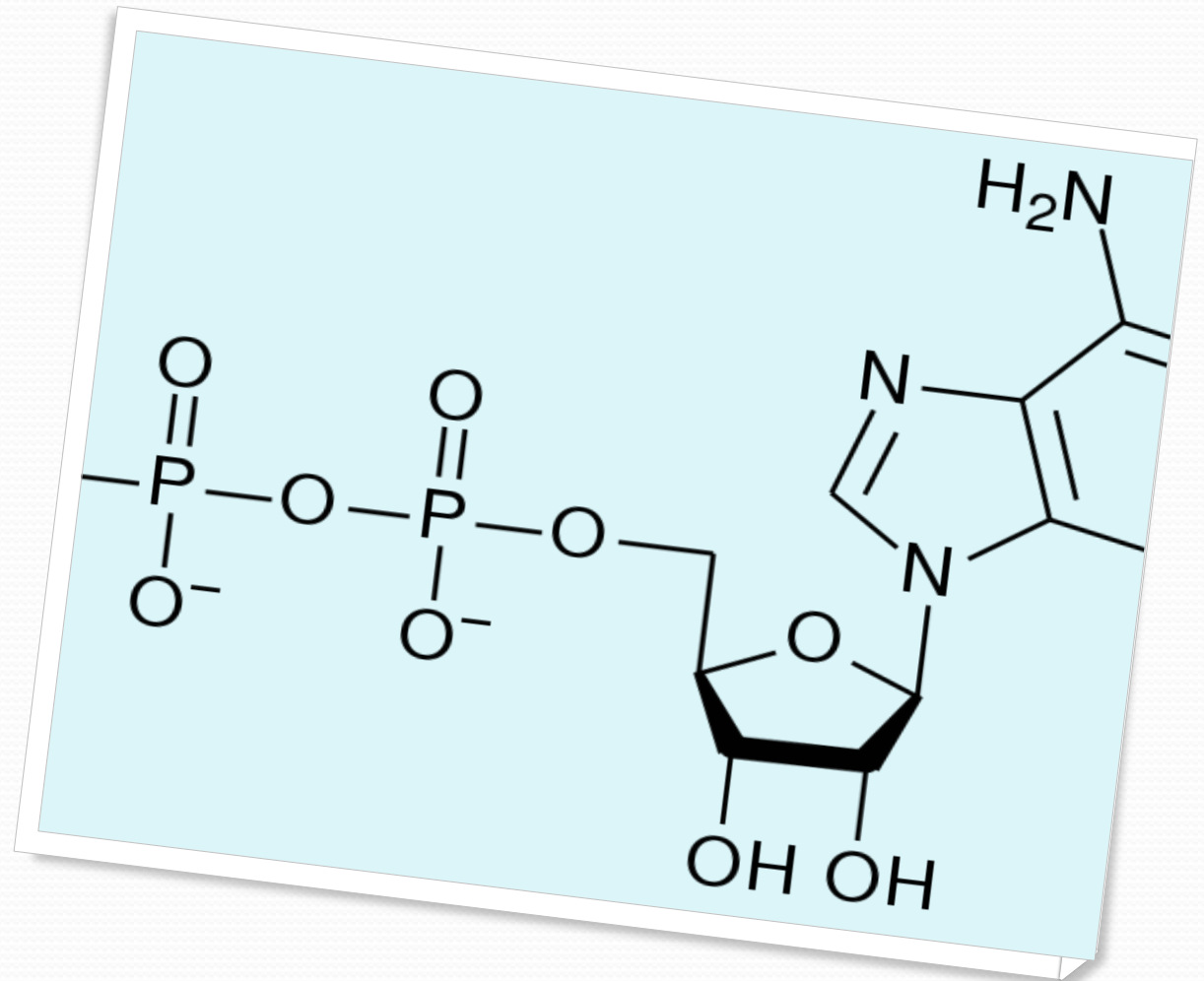
Energy
stored in
phosphate
bonds



ADP – Adenosine
= ribose +
adenine

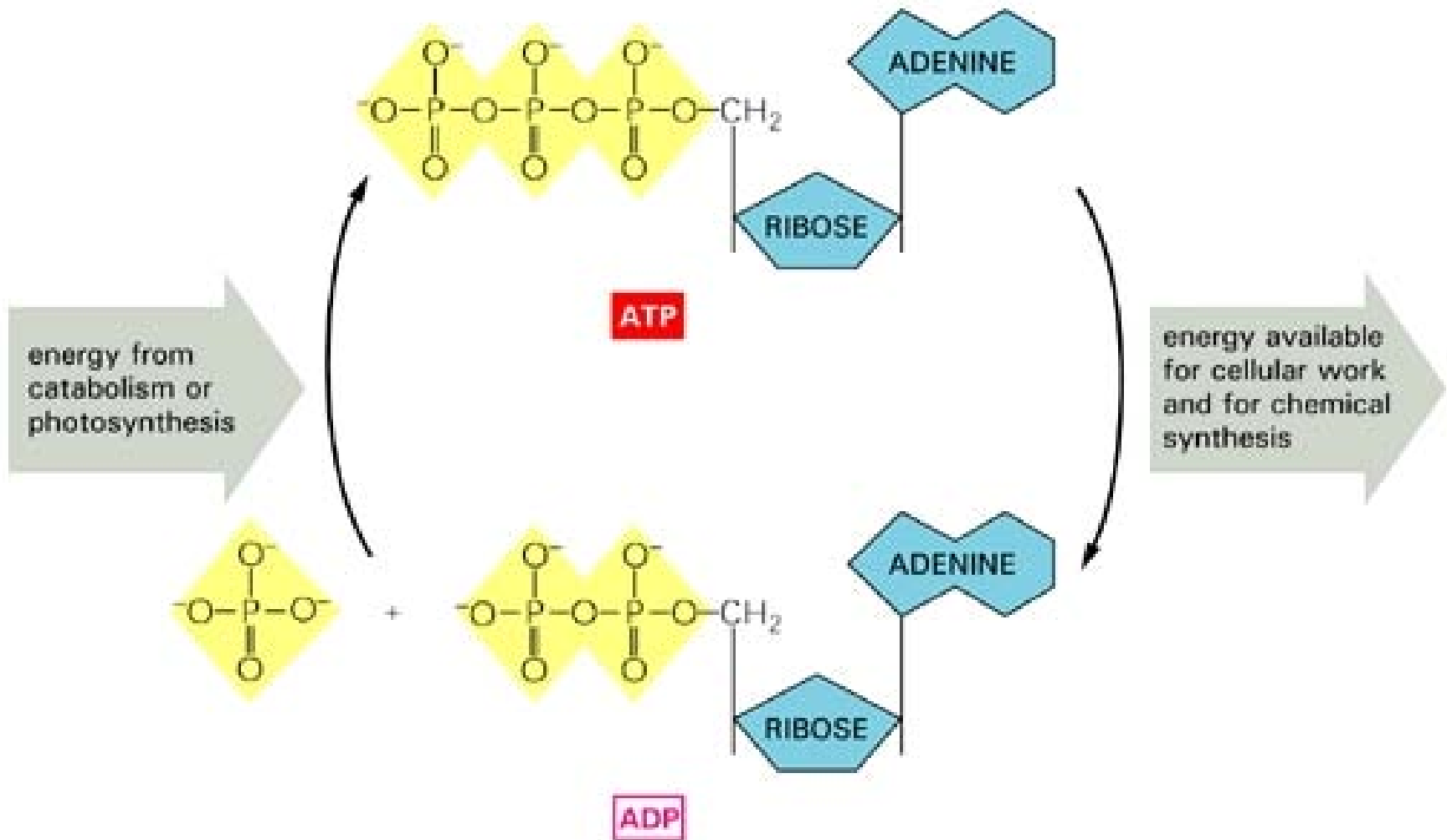
Diphosphate = 2
phosphates

Energy
released
when
phosphate
removed



ATP vs. ADP

- ATP = high energy molecule
- ADP = lower energy molecule
- Adding phosphate stores energy
- Removing phosphate releases energy



Energy from food

- Carbohydrates = ~36 ATP
- Lipids = ~146 ATP
- More energy stored in lipids, long term – less energy stored in carbohydrates, short term

Chemosynthesis

- Use chemical energy instead of sunlight to make organic molecules to store energy

