Chemistry 5

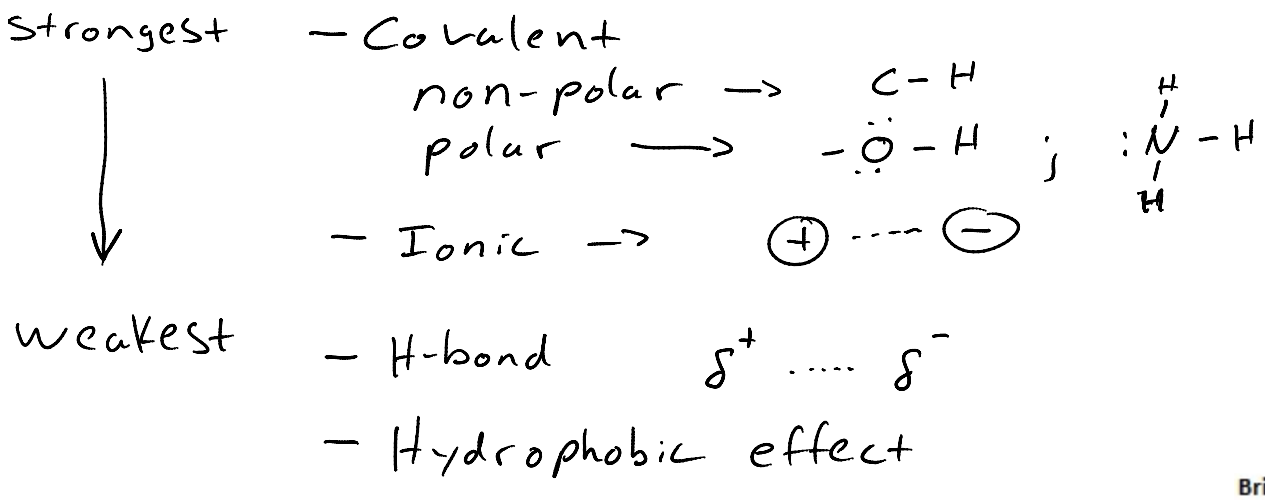
- iClicker 12A
- Hydrophobic and hydrophilic examples
- Solving problems and reading structures
- iClicker 12B

- Due in Lab next week
  - Pre-Lab 5
  - VGL II Lab Report

- Register your iClicker
-
- Exam Information

- **Last names starting with A through E**
  - **11th Floor of Healy**
- **Last names starting with F through Z**
  - **Lipke (here)**

Summary

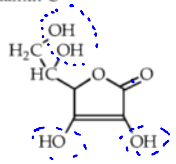


- vDw

Abbreviated Structure

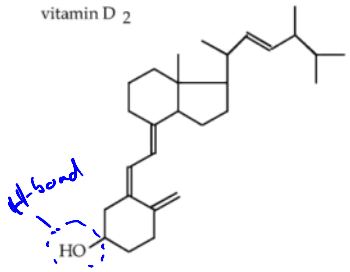
Cartoon

vitamin C



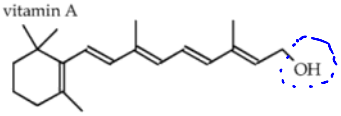
Hydrophilic
water soluble → can dissolve in urine →
can excrete rapidly →
will not build up in your body

vitamin D 2



hydrophobic

vitamin A

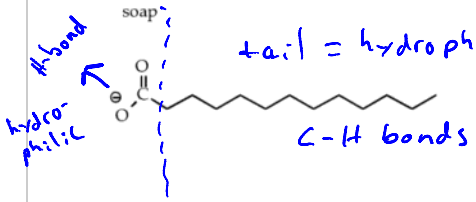


hydrophobic

not very soluble in water

Can't be excreted rapidly in urine
∴ build up toxic levels

soap



tail = hydrophobic

C-H bonds

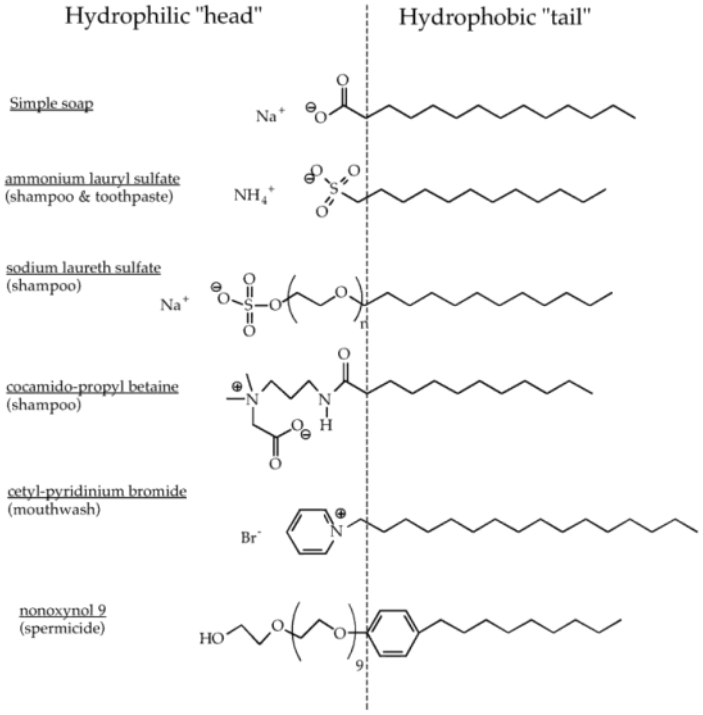
both a hydrophilic head and hydrophobic tail

Soap → cleans grease with H_2O
Lyphobic

Chemistry 5-2

Bio 111 Soap Molecules

All soap and detergent molecules have a hydrophilic head and a hydrophobic tail.
The structures of several soap molecules are shown below:



philic head

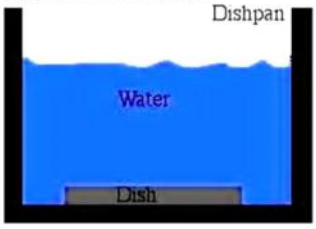
phobic tail

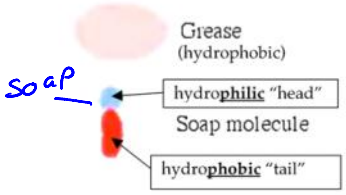
Chemistry 5-3

Bio 111 & Home Economics (Washing Dishes)

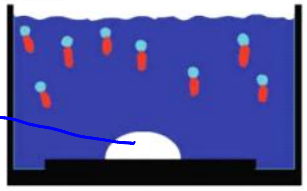
The animation of soap washing dishes can be found on the course website.

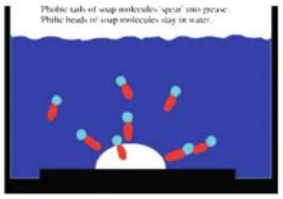
Key parts of the animation:

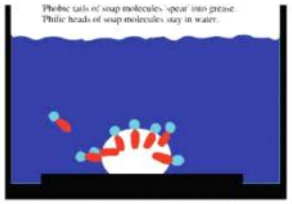


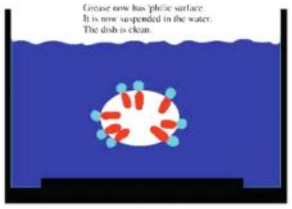


1) The hydrophobic grease on the dish does not dissolve in the water & sticks to the dish.







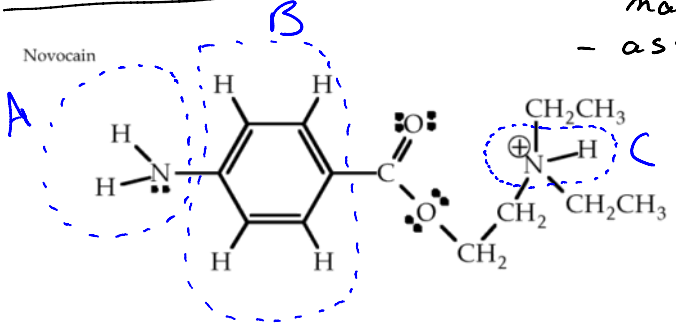


Thanks to *Evelyne Tschibelu* for the animation.

Chemistry 5-4

"Reading Structures"

Novocain



what types of bonds could this molec. make?
- assume a suitable partner is present; draw a suitable partner

A - has N-H bonds → (H-bond donor)
- has :N → (H-bond acceptor)

H-bonds are possible → hydrophilic

- vDW possible
- no ⊕ or ⊖ charge → no ionic bonds possible

∴ no phobic effect is possible

H ··· H-bond

Reading Structures

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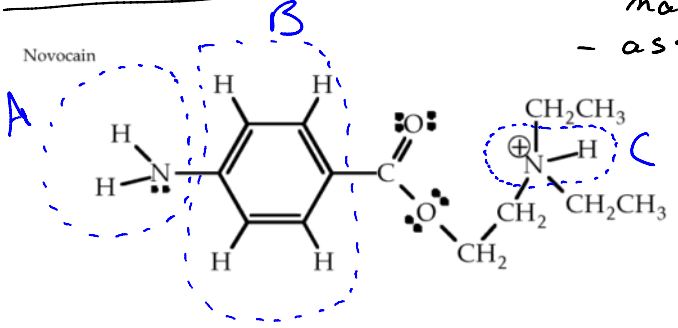
Novocain



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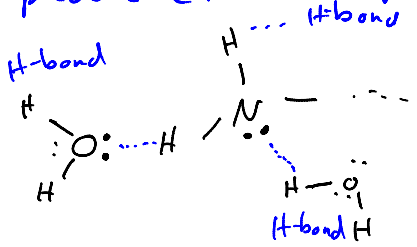
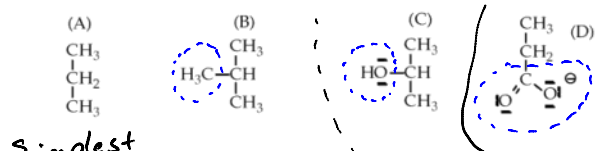


Chemistry 5-5

Ranking Structures from philic → phobic

(classic exam question)

Structures from yesterday's iClicker Problem



simplest

add CH_3 → more phobic

add OH → more philic

add ⊖ → lost CH_3 → more philic 2x

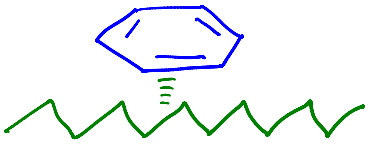
1. pick simplest structure
2. circle differences in other structures
3. score differences by increasing philic
   - add philic / lost phobic
   - add charge

most phobic — B — A — C — D — most philic

Chemistry 5-6

(B) C–H bonds → non-polar covalent bonds

- no H-bonds possible
- VDW possible
- no charge → no ionic bonds
- hydrophobic → hydrophobic effect



(C) 

- N–H bond → H-bond donor
  ∴ H-bonds are possible
- ionic → ⊕ charge is present
- VDW → possible
- hydrophilic → no hydrophobic effect possible