

## Physiologic roles of PPAR $\alpha$ , $\beta/\delta$ , and $\gamma$

### PPAR $\alpha$

- lipid catabolism and homeostasis (stimulate beta-oxidation of fatty acids)
- control of inflammatory processes and vascular integrity
- mediate the hypolipidemic function of fibrates
- **Liver:**  $\uparrow$ FA oxidation  
 $\uparrow$ FA uptake.  $\uparrow$ ApoA-I,  
 $\uparrow$ Apo A-II  $\uparrow$ HDL
- **Vessels:**  $\uparrow$ TG  $\downarrow$ FFA  
 $\uparrow$ HDL  $\downarrow$ VLDL  $\downarrow$ Cytokines  
 $\uparrow$ ABCA1  $\downarrow$ NF-kB  $\uparrow$ ApoE

### PPAR $\beta/\delta$

- responsible for insulin sensitivity and glucose homeostasis, vascular integrity
- **Adipocentric action:**  
 $\downarrow$ Cytokines  $\downarrow$ Resistin  $\downarrow$ FFA  
 $\uparrow$ ABCA1  $\downarrow$ NF-kB  $\uparrow$ GLUT4
- **Skeletal muscle:**  
 $\uparrow$ Glucose uptake,  
 $\uparrow$ Glycogen synthesis

### PPAR $\gamma$

- **Glucose homeostasis and lipid storage**  
differentiation and maturation of adipocytes  
increase IS and glucose homeostasis (prevents hyperglycemia), vascular integrity,
- **Skeletal muscle/liver/adipocyte**  $\uparrow$ FA oxidation  
 $\uparrow$ UCP,  $\downarrow$ TG  $\uparrow$ HDL