

## Match of wavelength to features we want to see:

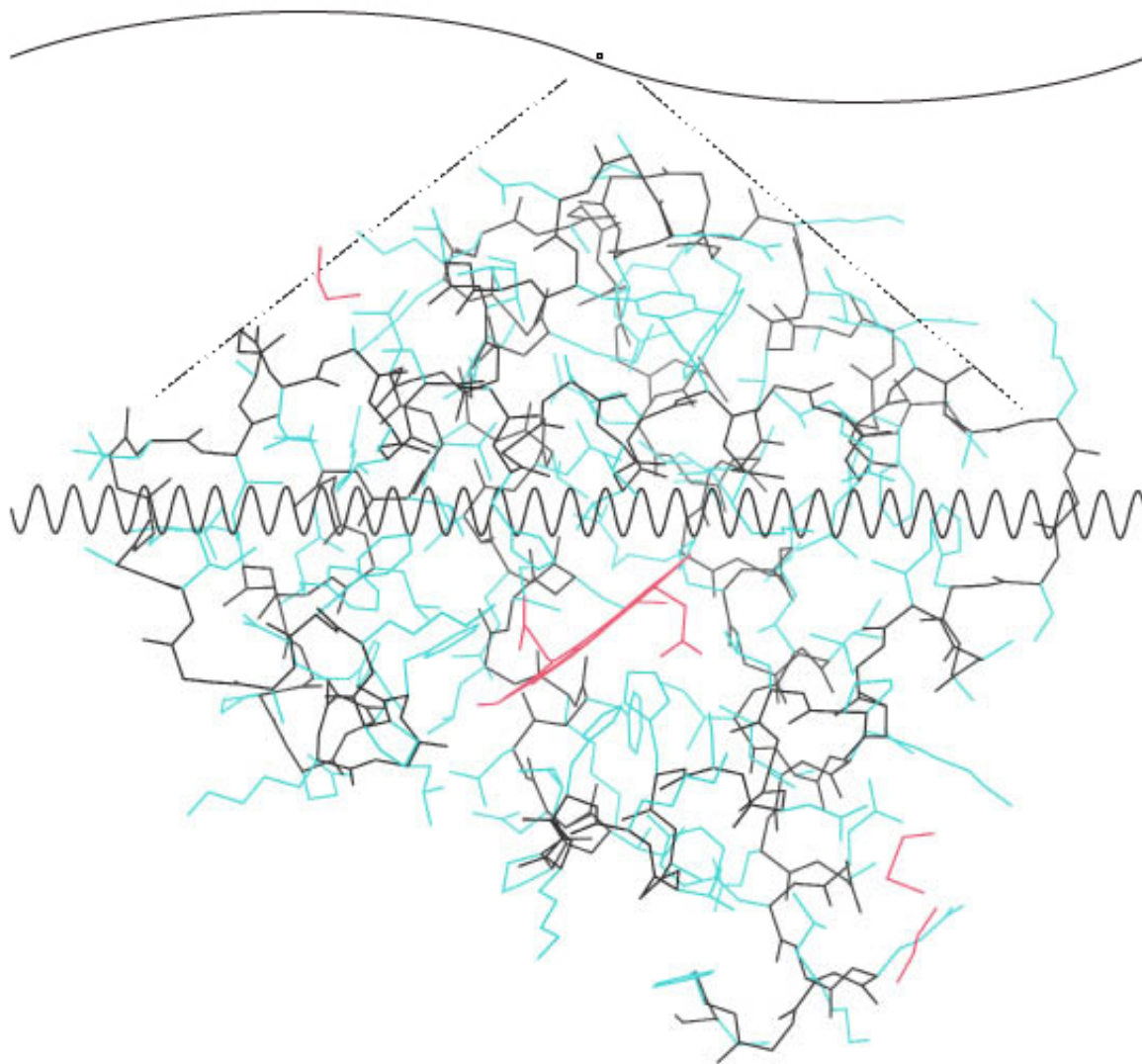
x-ray:  $\sim 1 \text{ \AA}$ , atom:  $\sim 3 \text{ \AA}$ , protein molecule:  $\sim 50 \text{ \AA}$ , (bonded atoms:  $1.5 \text{ \AA}$  apart)  
Green light:  $5000 \text{ \AA}$ , scale to 5meters =  $5000 \text{ mm}$ , scaled protein:  $50 \text{ mm} = 5 \text{ cm}$ ,  
(bonded atoms:  $1.5 \text{ mm}$ )

→ Draw 1 wavelength across both boards (e.g. of 147 Nanaline Duke bldg.),  
(Note change of phase along wave)

look at two 5 cm patches "molecules": (or two neighboring 3mm patches "atoms"), myoglobin would be about 5cm in diameter.

even if they would scatter this light, could we tell we had two of them?

5 meters scaled green light wave with scaled molecule; expanded to 32 cycles of  $1.5 \text{ \AA}$  across the diameter of myoglobin:



Show here Myoglobin  $0.9 \text{ \AA}$  structure with electron density

→ 2NRL.kin with 2nrl.omap in KiNG