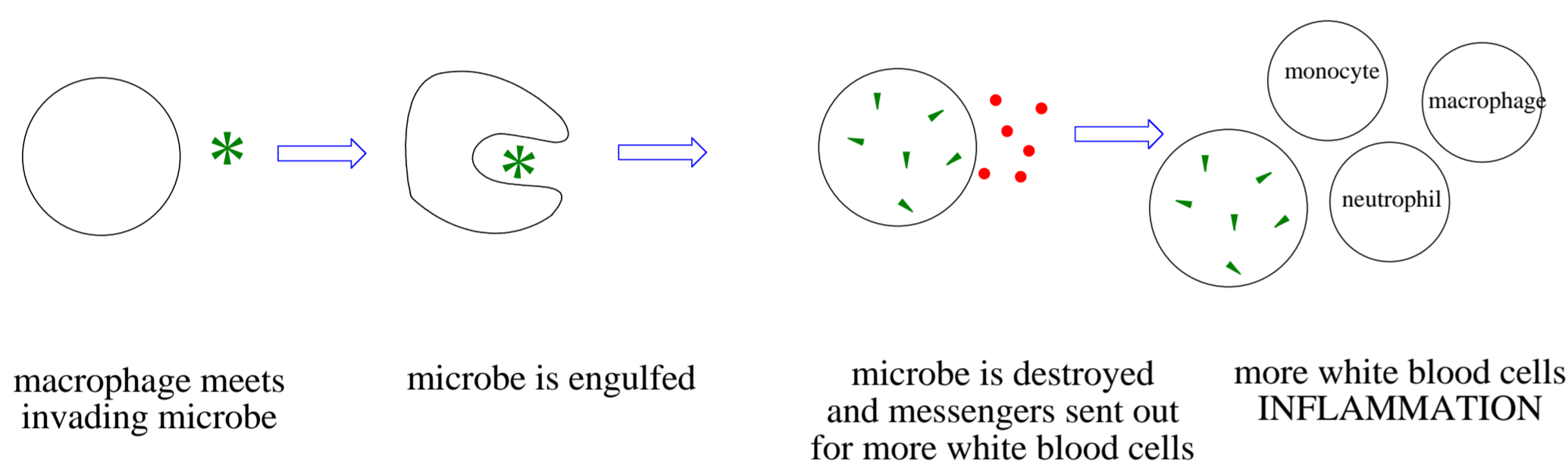


➤ Inflammation is the body's way of fighting invading foreign microbes.

➤ Macrophages – a type of white blood cell – are found circulating the body in the blood. When they come across an invading microbe they engulf and destroy it and send out a **message** to recruit more white blood cells (macrophages, neutrophils and monocytes) to the area so they can help fight the infection and stop it spreading.

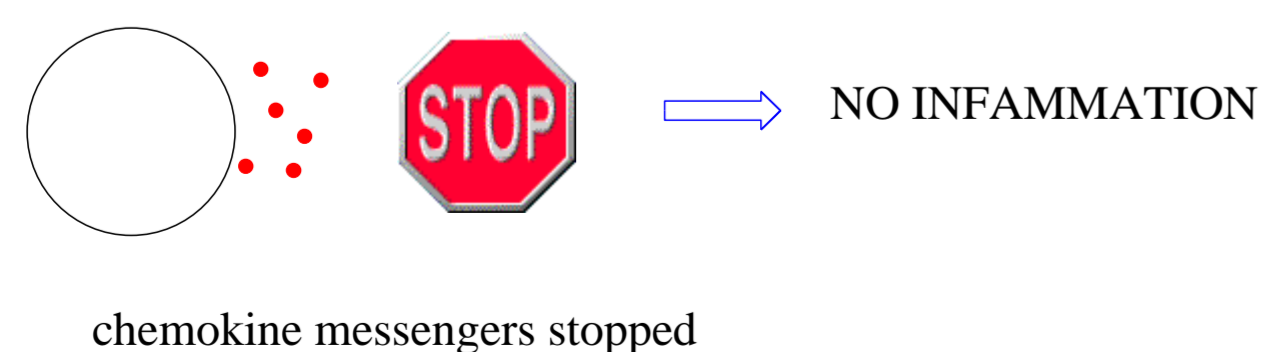
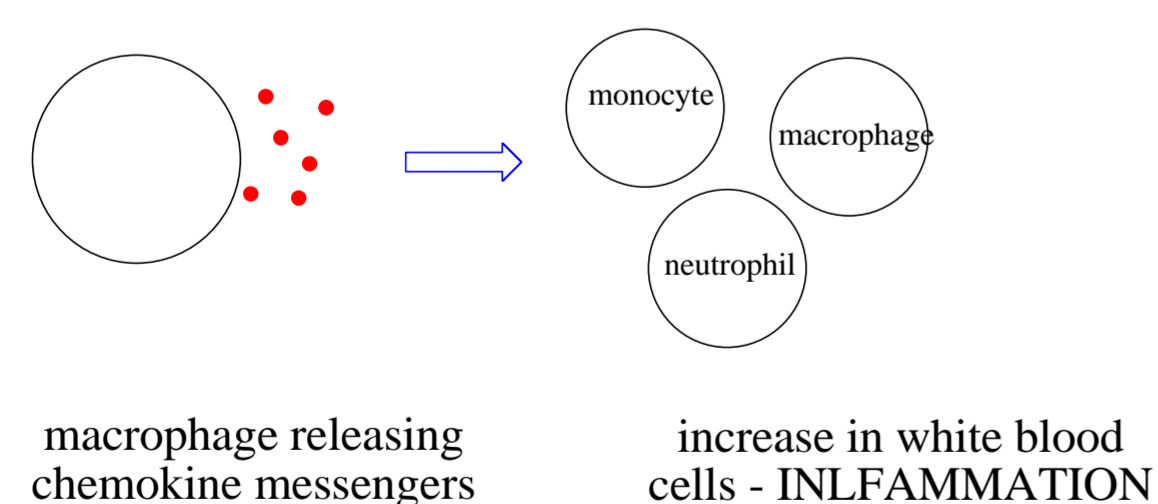
➤ The result of this process is heat, redness, swelling and pain – the physical properties of **INFLAMMATION**.



➤ The **message** is sent out by signalling molecules called **chemokines**.

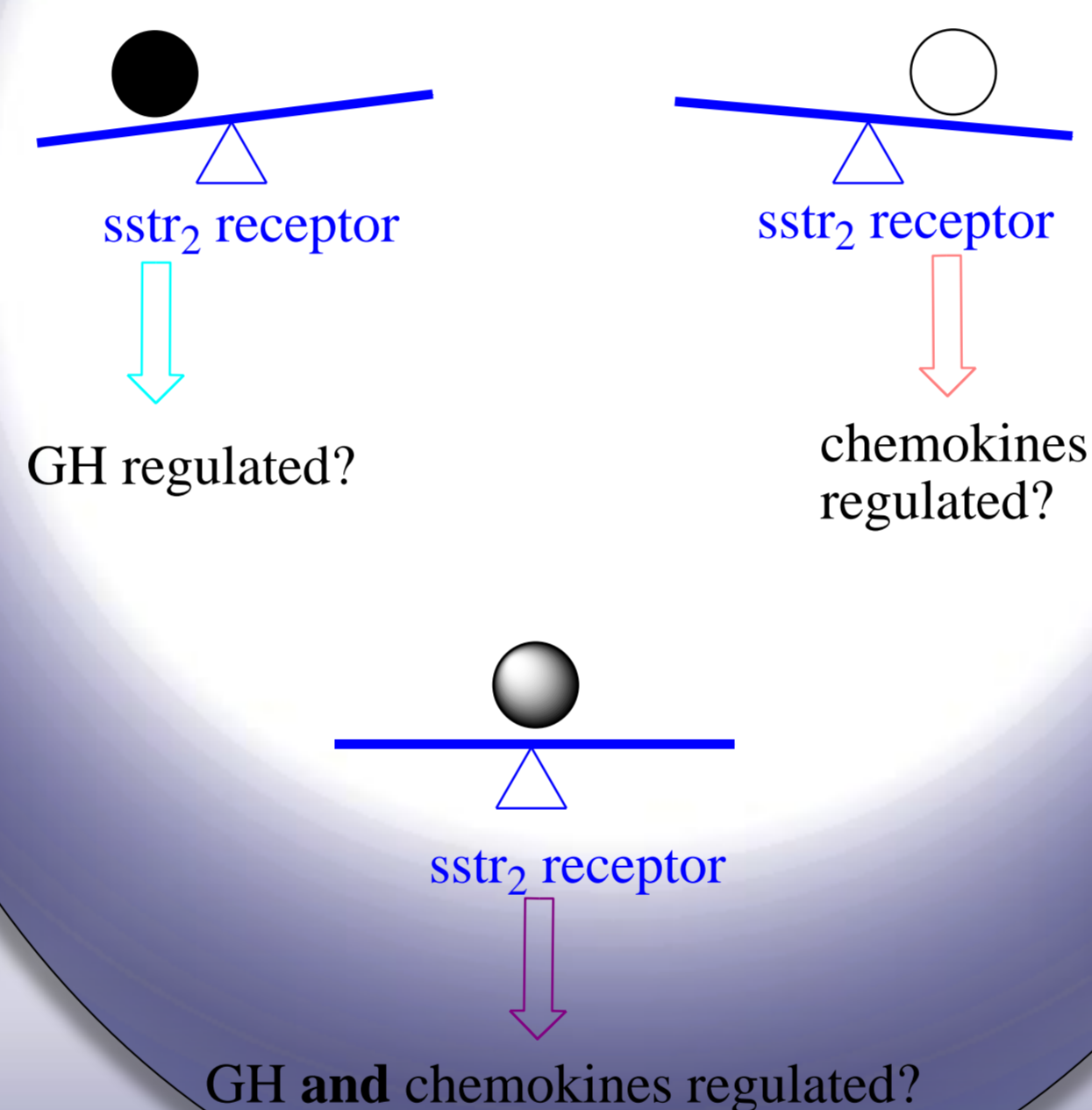
➤ Sometimes **inflammation** is inappropriate and can **exacerbate** certain **diseases** for example cancer, arthritis and asthma.

➤ Chemokines are therefore a good target for anti-inflammatory drugs – if chemokines are prevented from delivering their message inflammation will be prevented.

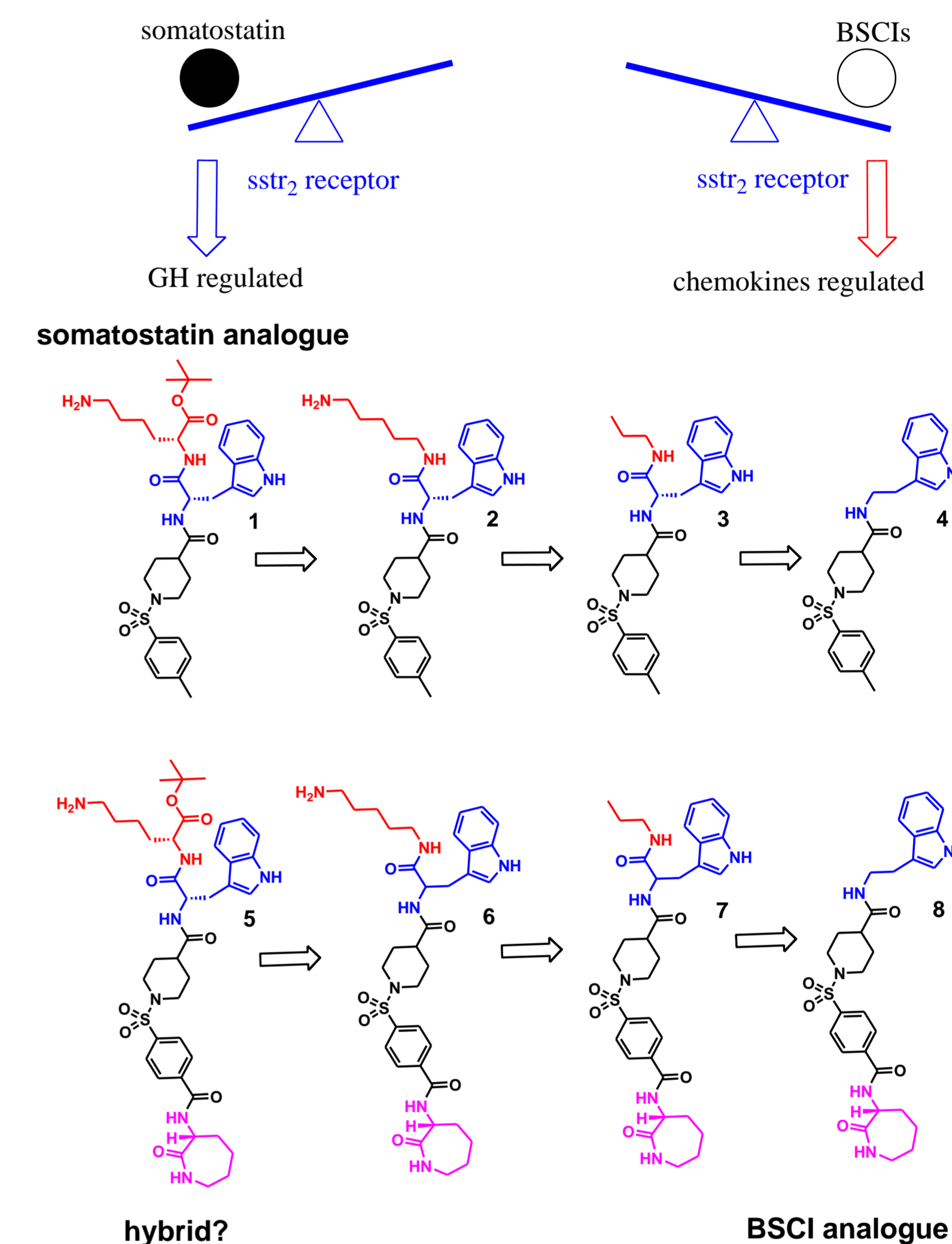


➤ Broad-Spectrum Chemokine Inhibitors (BSCIs) do just this.

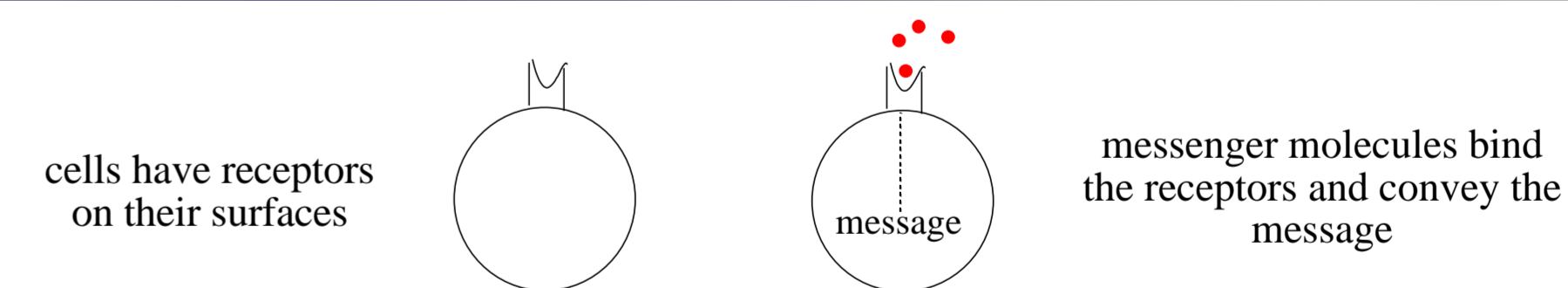
The aim of my project is to synthesise a catalogue of molecules analogous to both somatostatin and BSCIs to investigate the important part of the molecules for tipping $sstr_2$ from GH to BSCI function..



➤ The $sstr_2$ receptor is a bit like a seesaw – when somatostatin is bound GH is affected but when BSCIs are bound chemokines are affected.

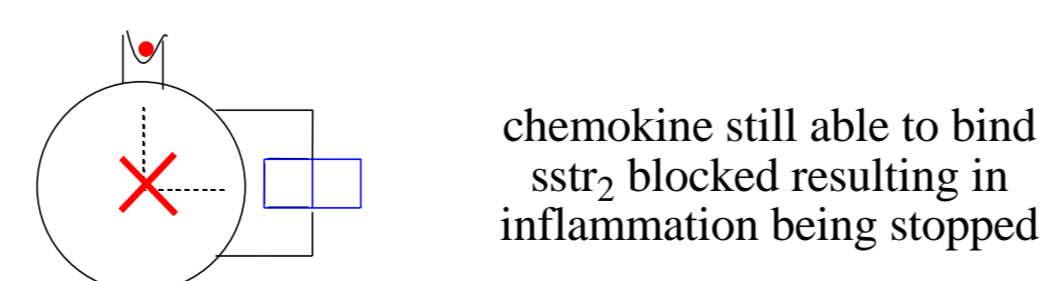


➤ Cells send **messages** to each other via signalling molecules. **Receptors** on the surfaces of the cells attach to the **signalling molecules** for the message to be conveyed.



➤ Previously it was believed one signalling molecule would fit only one receptor to give a response – like a key (the signalling molecule) fits only one lock (the receptor) and gives one response (the lock opens).

➤ However it has been discovered the receptor can change shape to fit different signalling molecules to produce a **different response** – like a hand fits around a pen and the response is to write, and it can also fit around a mug with the response being to lift it to the mouth.

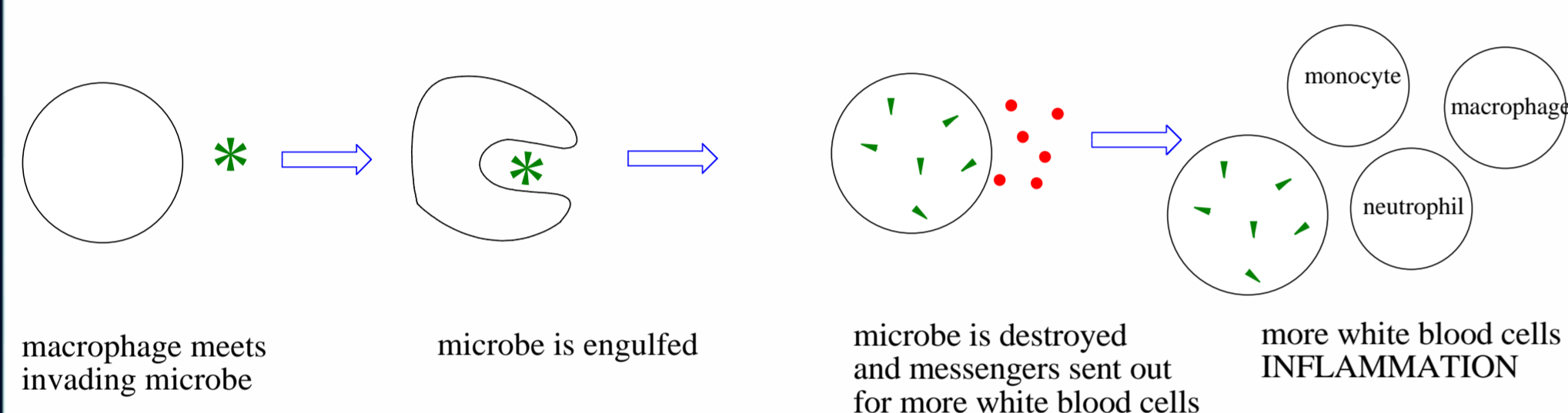


➤ This is what has happened with BSCIs. They do not bind to the chemokine receptor they bind to a receptor called **$sstr_2$** usually for a signalling molecule called **somatostatin**. When somatostatin binds $sstr_2$ growth hormone (GH) is affected however when BSCIs bind $sstr_2$ chemokines are affected.

➤ Inflammation is the body's way of fighting invading foreign microbes.

➤ Macrophages – a type of white blood cell – are found circulating the body in the blood. When they come across an invading microbe they engulf and destroy it and send out a **message** to recruit more white blood cells (macrophages, neutrophils and monocytes) to the area so they can help fight the infection and stop it spreading.

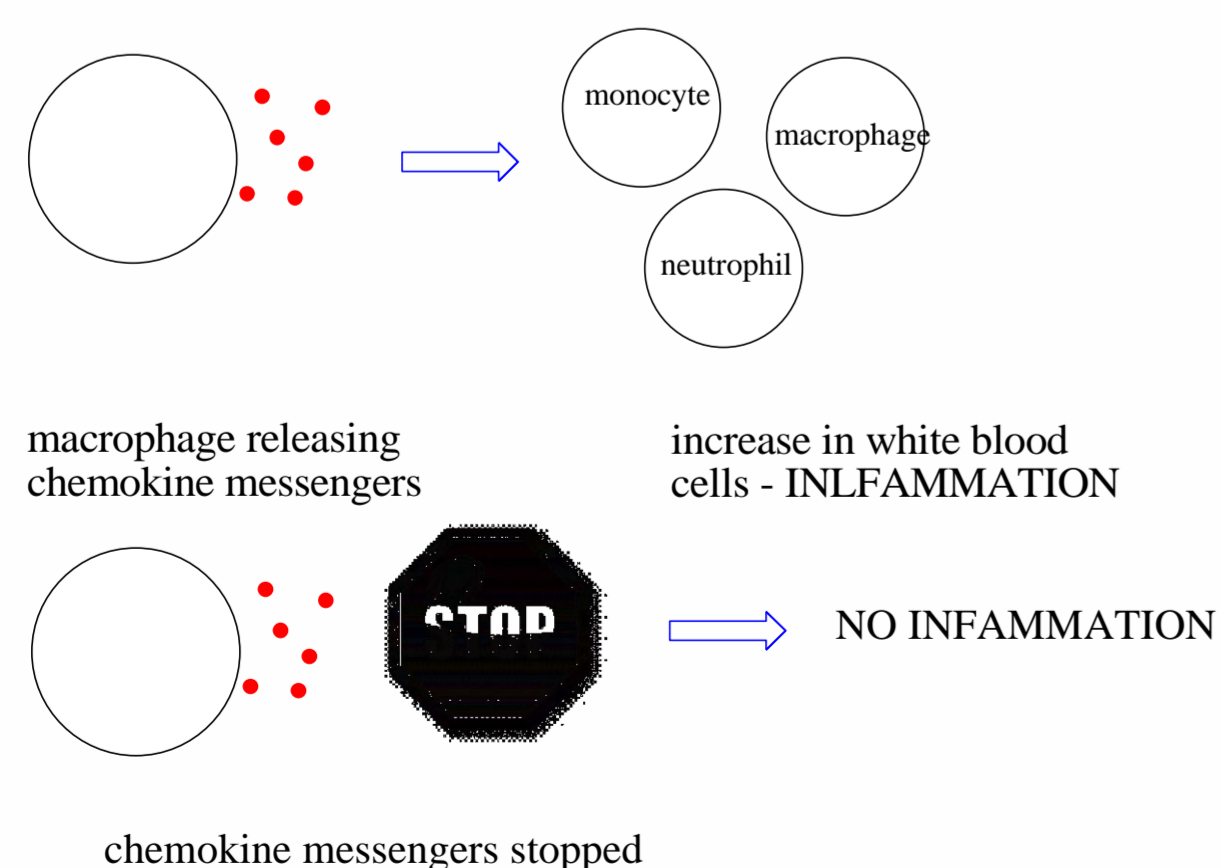
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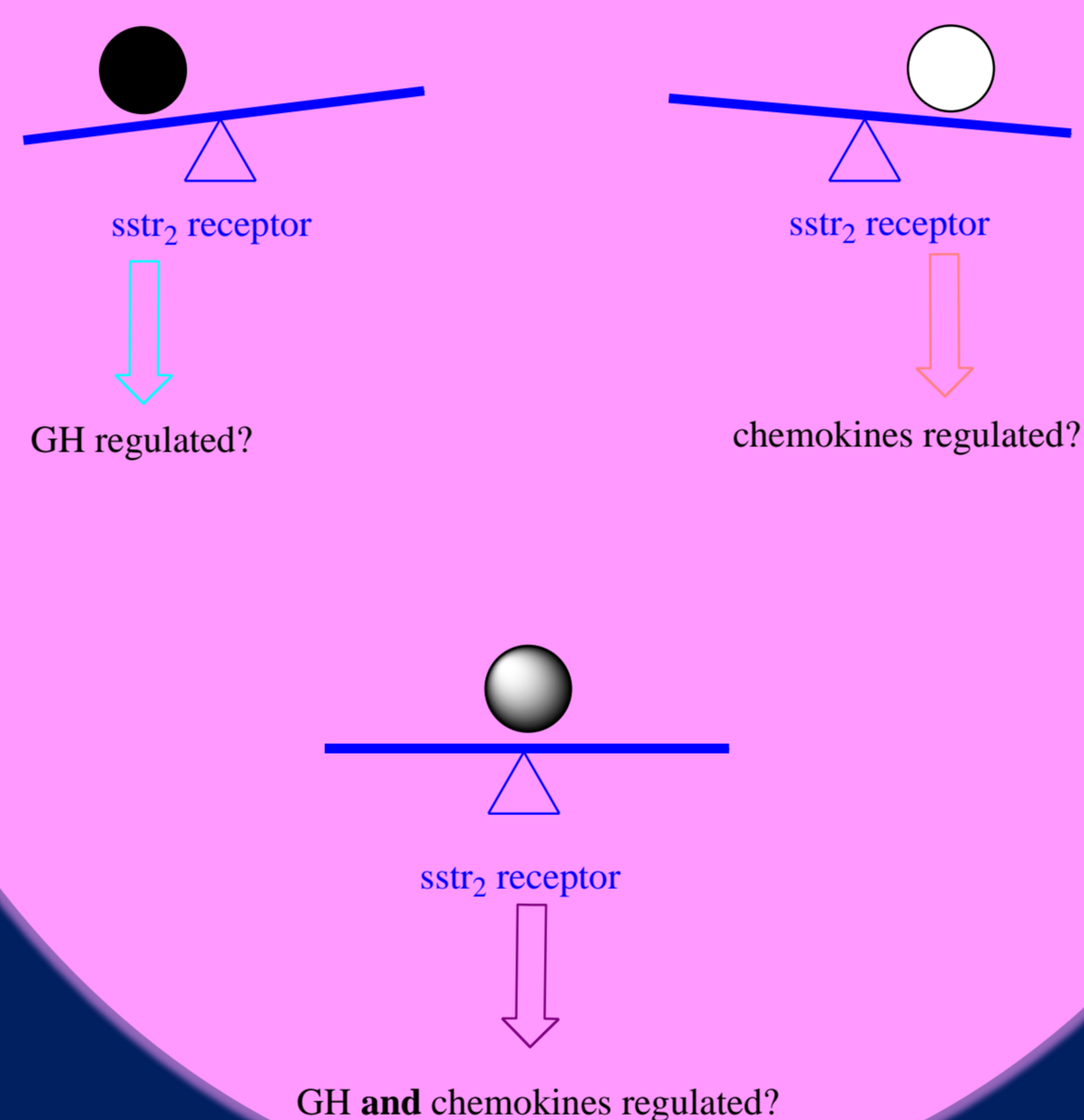
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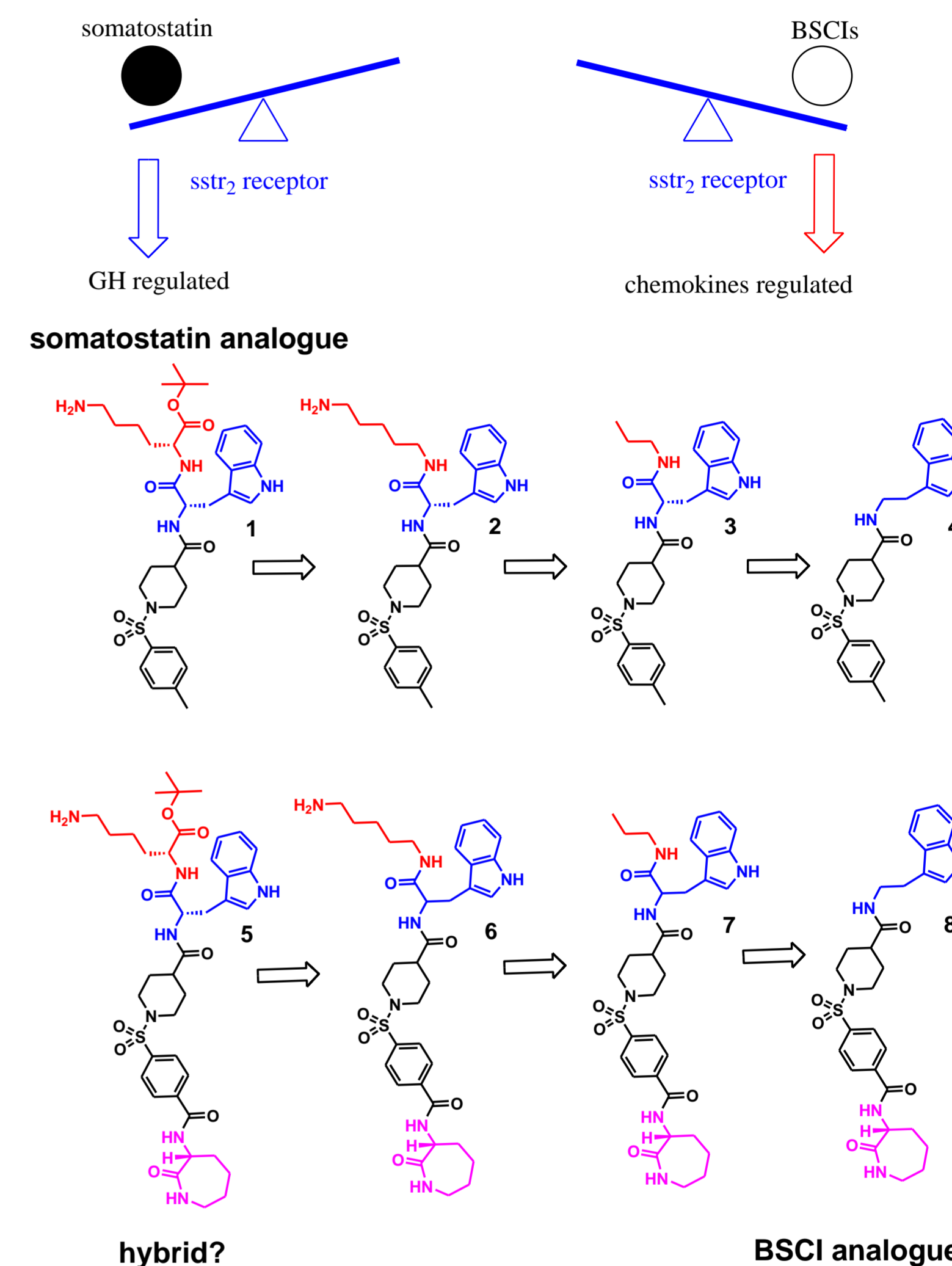


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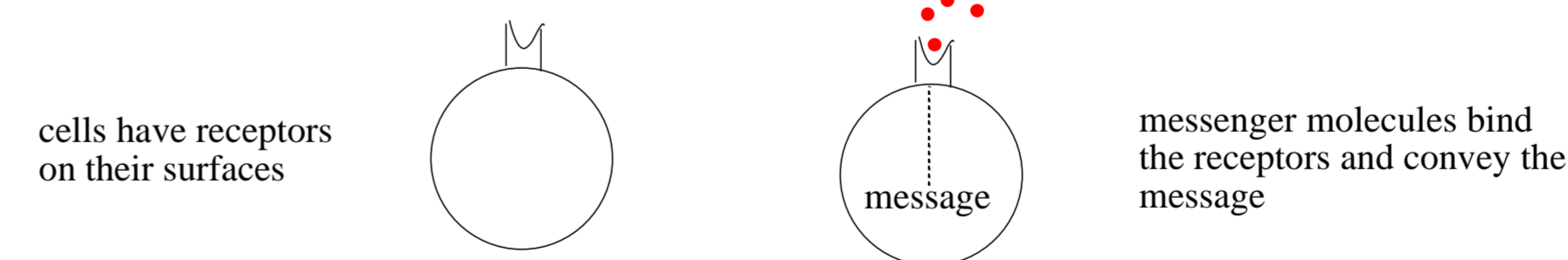
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➤ Cells send messages to each other via signalling molecules, there are receptors on the surfaces of the cells for the signalling molecules to attach to and convey the signal.



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