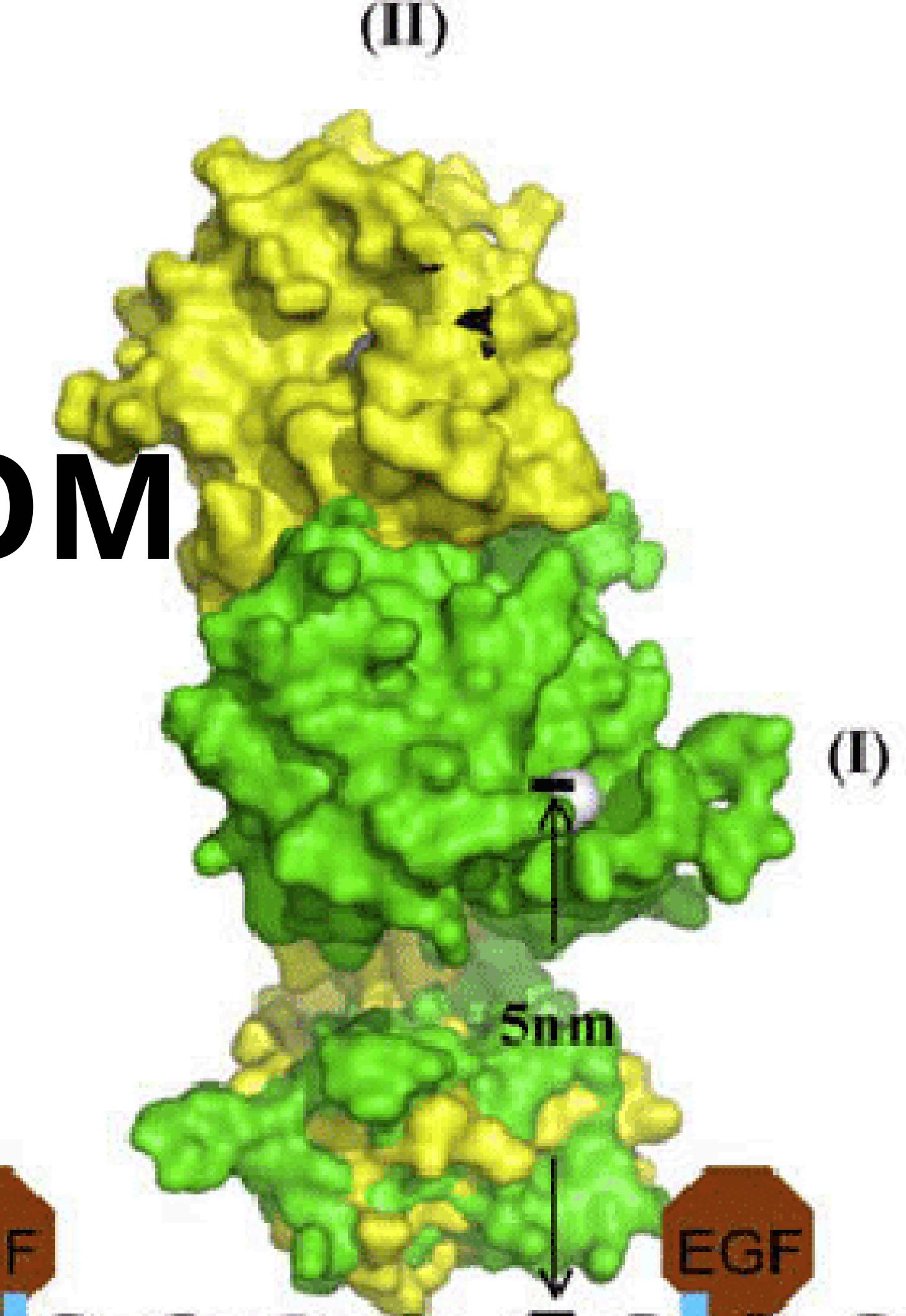
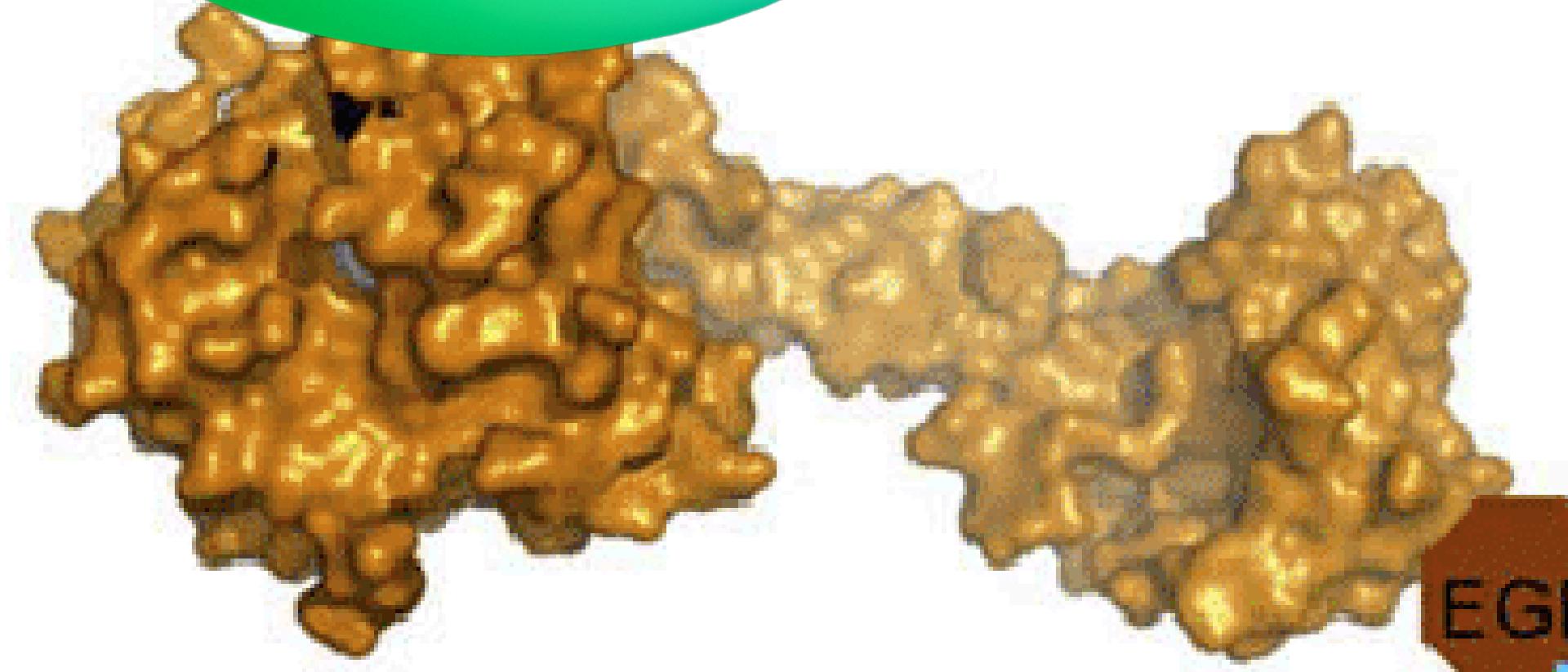


THE CHEMISTRY OF SNAKE VENOM AND ITS MEDICINAL POTENTIAL

WINTER INTERNSHIP

CHEMICAL NATURE OF SNAKE VENOM



types of protein and peptide

present mainly in snake venom

3FTx- three-finger toxin

CRISP - cysteine-rich secretory protein

CTL/SNACLEC -C-type lectin and C-type lectin-like protein

DEF defensin

DIS disintegrin

KSPI Kunitz-type serine protease inhibitor

LAAO l-amino acid oxidase

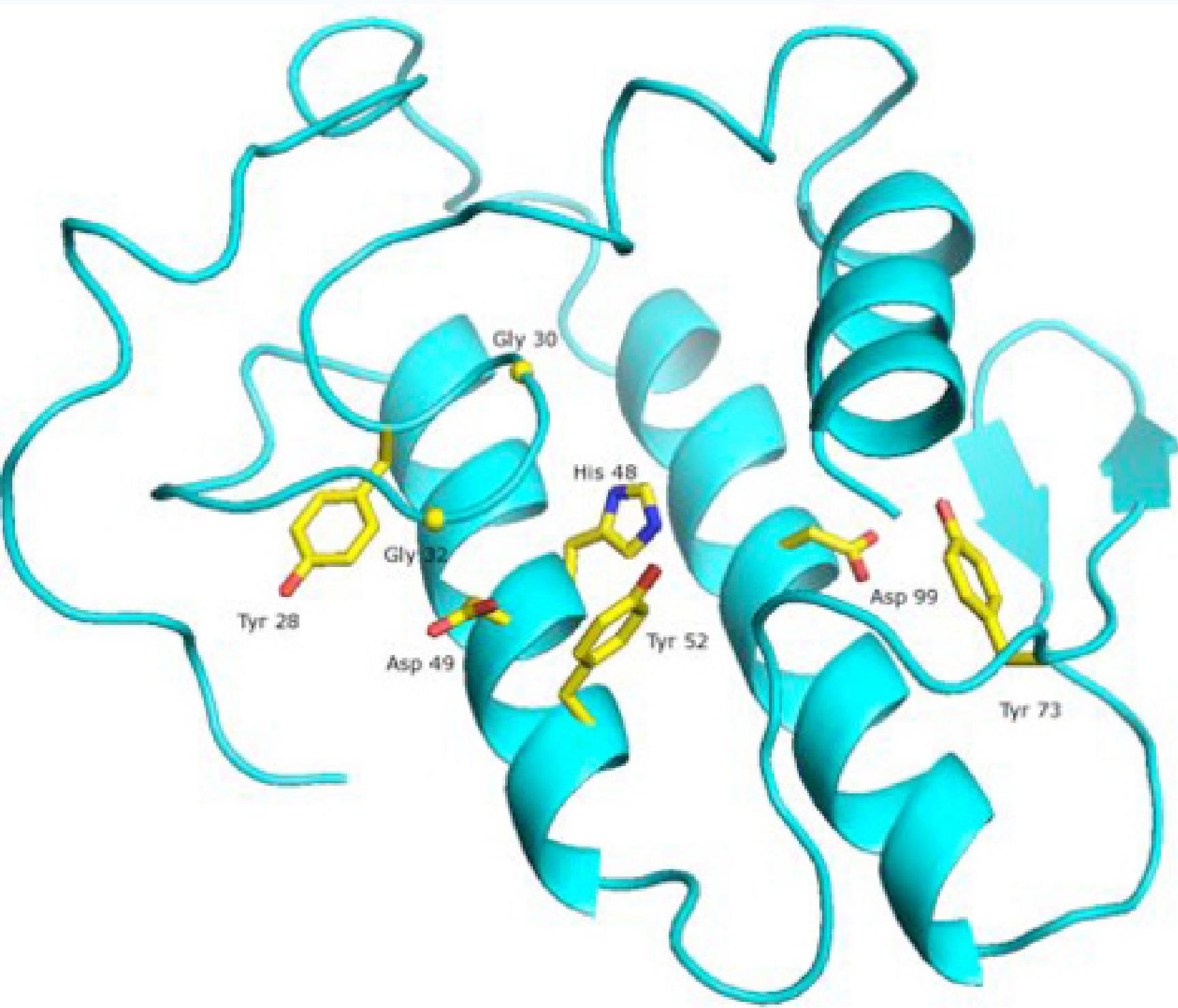
NP natriuretic peptide

PLA2 phospholipase A2

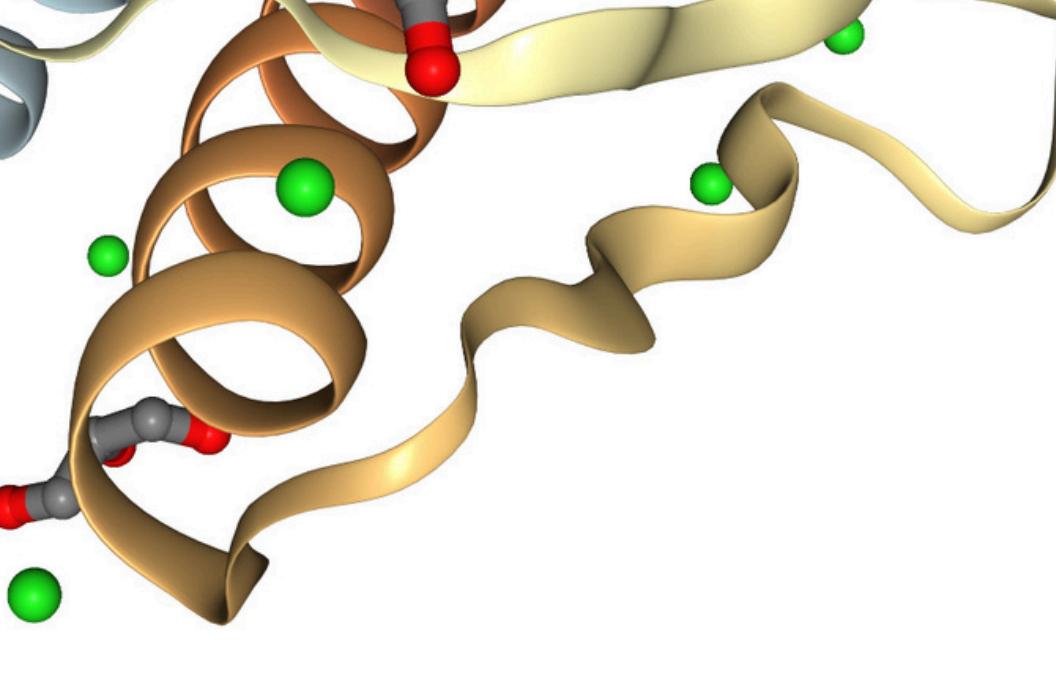
SVMP snake venom metalloproteinase

SVSP snake venom serine protease

PLA₂



phospholipase A2 is the groups have a molecular mass of 13–19 kDa, contain 5–8 disulfide bridges and form dimers in aqueous solution.



PLA₂

Enzymatic activity

Yes Principal biological targets -Plasma membrane of myocytes and various receptors in the axolemma (undetermined molecular target).

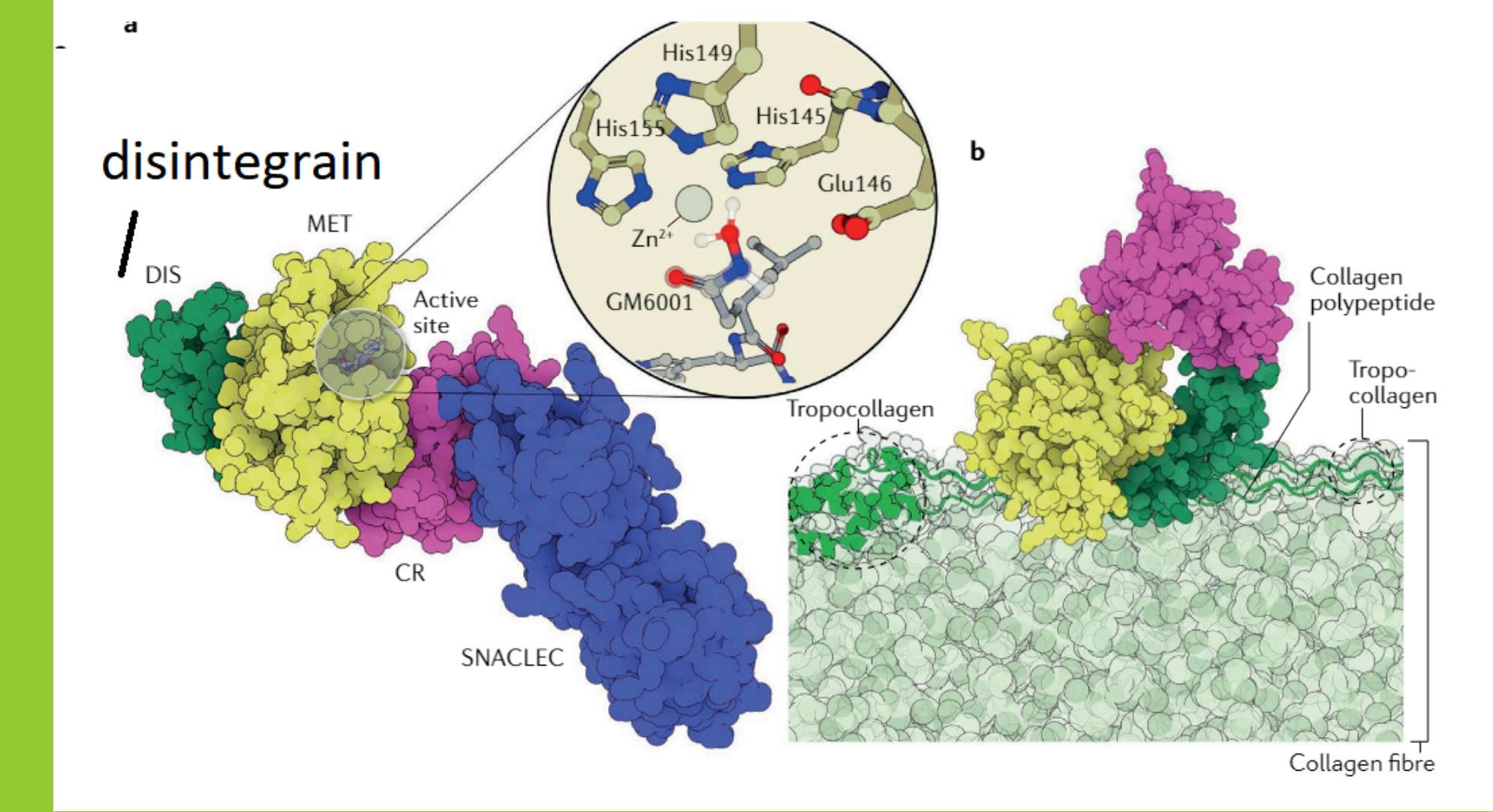
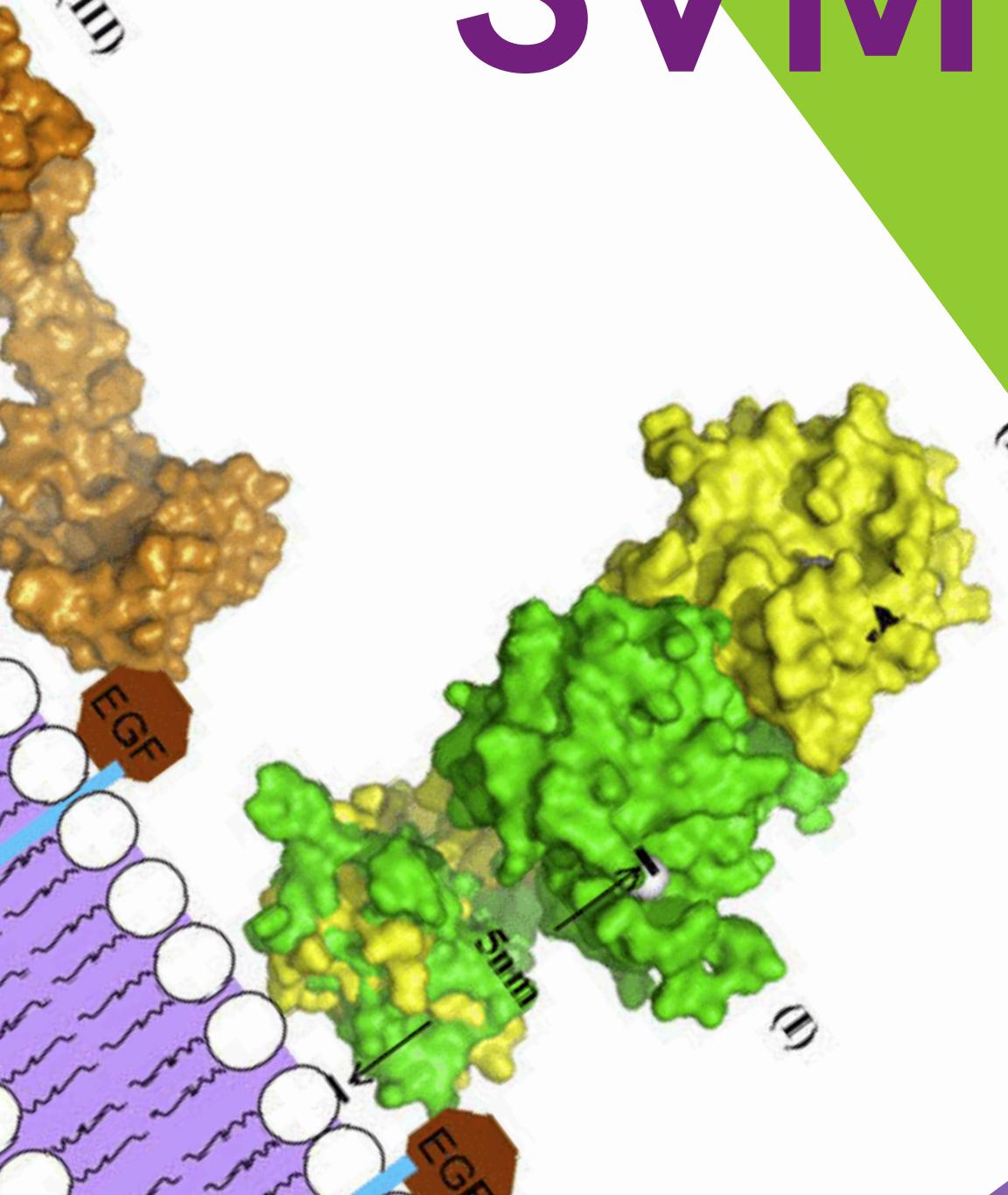
Major pathophysiological activities

Acute skeletal muscle necrosis, flaccid paralysis, local inflammatory reactions (oedema, leukocyte influx into tissues and pain).

Most promising therapeutic applications

Antibacterial activity against *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Enterobacter aerogenes*; anti-parasite effects; antiviral activity against HIV and dengue

SVMP



RVV-X activates blood coagulation factor X . The catalytic domain (MET) is coloured yellow, the disintegrin (DIS) domain is coloured green and the cysteine-rich domain (CR) is coloured pink.

SVMP

principal biological targets

Wide variety of targets;
most notable are collagen
and blood coagulation
factors

Major pathophysiologic al activities

Haemostasis; blood coagulation,
fibrinolysis and platelet aggregation

Most promising therapeutic applications

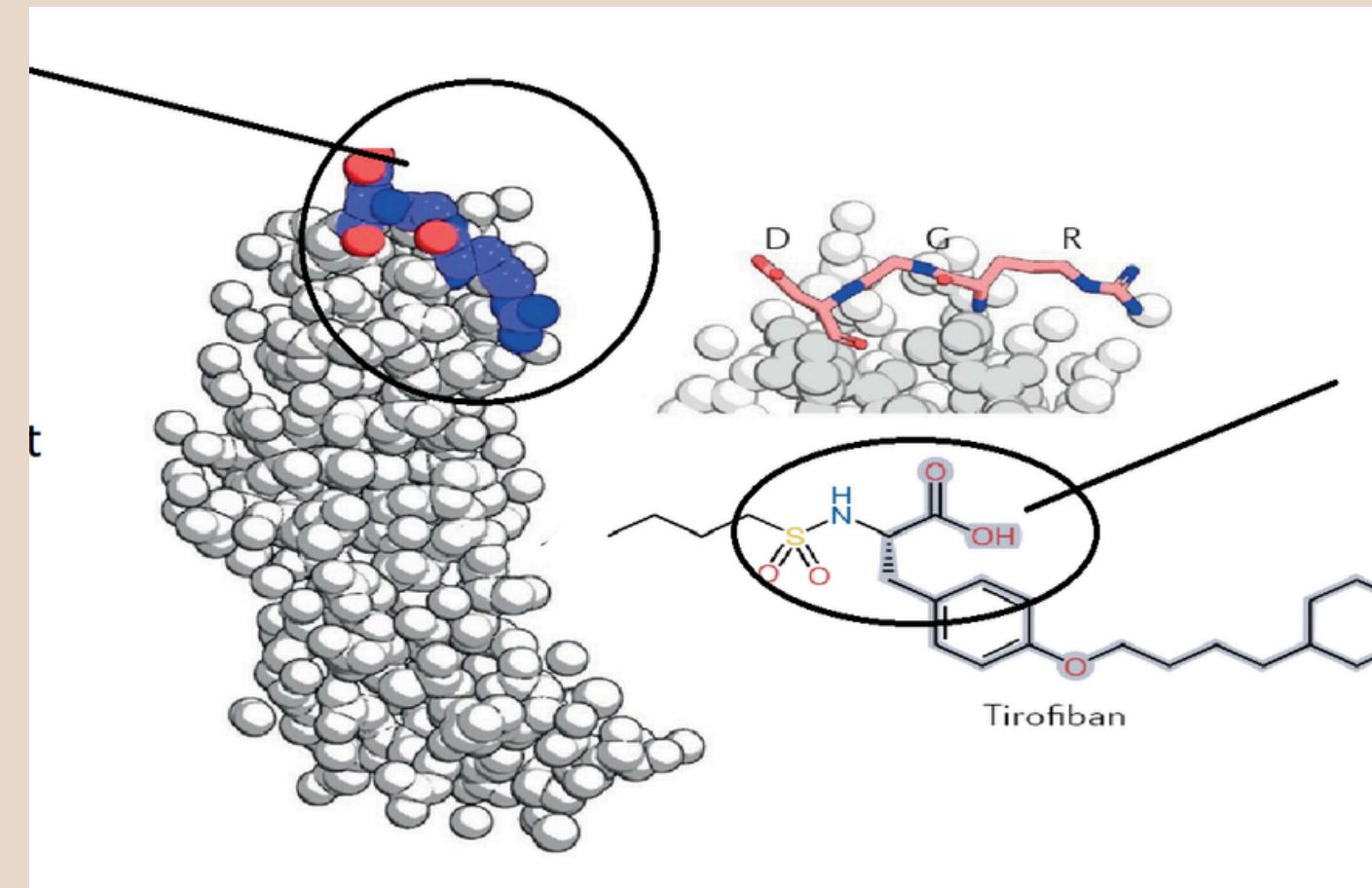
predominantly, haemorrhagic
activity but can cause the
proteolytic degradation of
fibrinogen and fibrin, induce
apoptosis and inhibit platelet
aggregation

the medical importance of SVMP

Tirofiban

The drug tirofiban was inspired by a disintegrin called echistatin found in the venom of the saw-scaled viper

echistatin



CHALLENGES

If we are making something life saving from lethal compound.

Snake envenomation is still a concern. antivenom or drug derived from venom have significant limitations . Beside it , drug derived from venom can cause lots of side effects. Drugs are just chemical alterations if there is distrub in alteration in body can cause venomic effect.

RECOMMENDATIONS

- **Pla2 used in AIDS treatment**

PLA2 used to kill 50 percent of HIV infected cells.
- **Pla2 can use in autoimmune disorders to kill vigorous immune cells**
- **PLA2 can use to kill cancer cells but affinity to specific cancerous cells is important .**

Conclusion

THE DRUGS ALREADY APPROVED AND UNDER DEVELOPMENT DERIVED FROM SNAKE VENOM DEMONSTRATE THAT TOXIC BIOACTIVITY CAN BE TRANSFORMED INTO A THERAPY FOR THE RIGHT DISEASE. LARGE TOXIN MOLECULES CAN BE REDESIGNED AND REDUCED TO THEIR RECOGNITION MOTIFS FOR ORAL DELIVERY WHILE MAINTAINING AFFINITY AND SPECIFICITY.

Special thanks to Dr.
Priyatosh Ranjan , DYPIU.

References

[HTTPS://WWW.NATURE.COM/ARTICLES/S41570-022-00393-7.EPPDF?](https://www.nature.com/articles/s41570-022-00393-7.pdf)

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