JOURNEY TO *1 MILLION* MACROCYLES: CAN WE FIND A DRUG LEAD?

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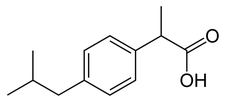
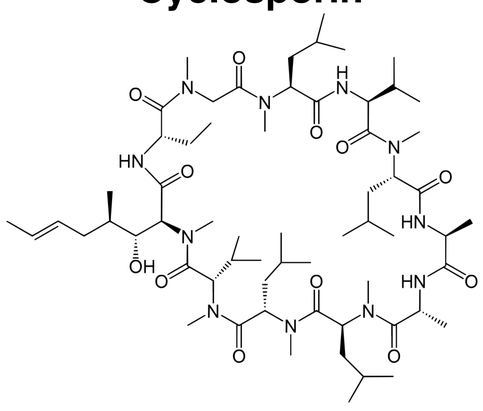
DRUGS FROM PHARMA AND NATURE

Ibuprofen



Cyclosporin



THIS PROJECT

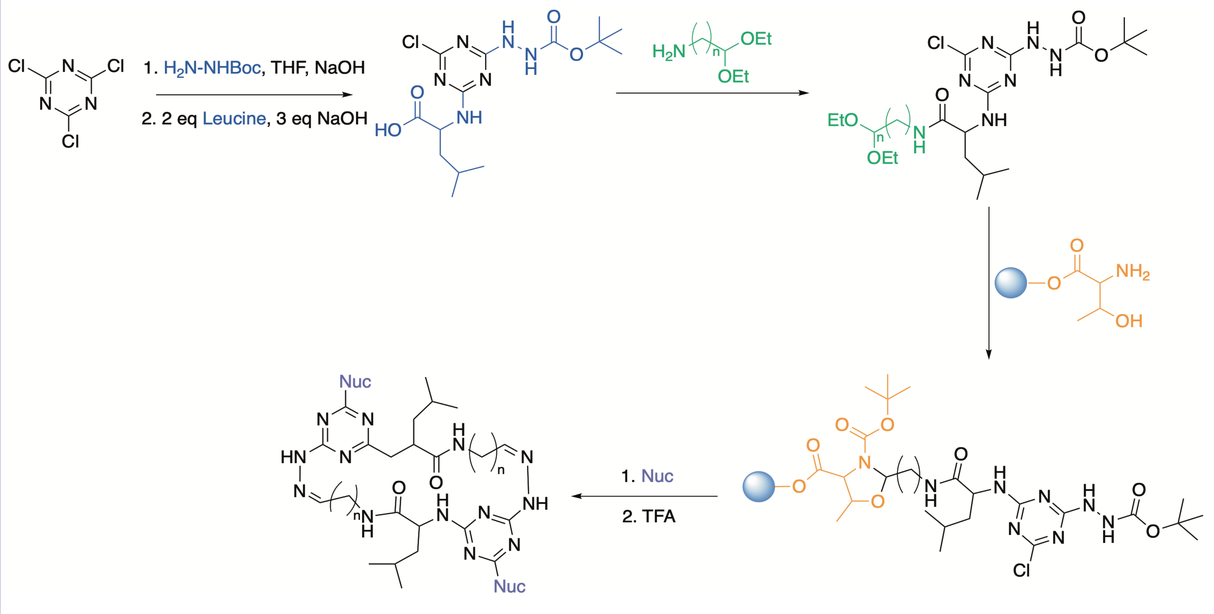
Molecules used as drugs are made either in solution or on solid supports referred to as 'beads'. Here, a route to cyclic molecules synthesized on beads is described. This bead-based method can be used to rapidly make millions of cyclic molecules. The effort results in a diverse library of macrocycles with different groups. The products will be assayed for biological activity in a disease model of breast cancer.

LONG TERM GOAL

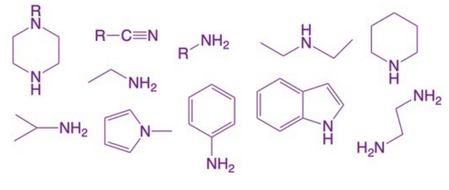
The long-term goal of this research is to develop an efficient strategy to produce new drugs that could be adopted by the pharmaceutical industry for any number of different diseases.

Must drugs arrange small numbers of atoms in a row. Here, we are examining strategies to arrange large numbers of atoms in a ring. The first strategy is most common because these molecules are easy to make (like ibuprofen). Nature has given us very useful drugs where the atoms are arranged in a ring (like cyclosporin).

APPROACH



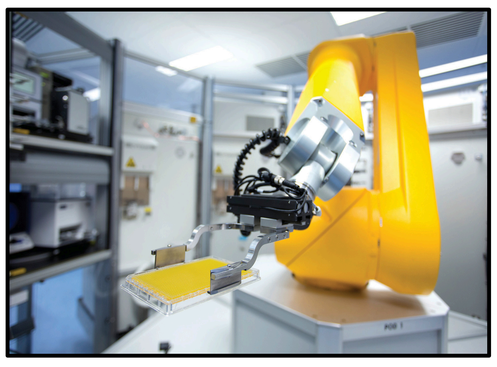
POTENTIAL NUCLEOPHILES



CONCLUSION

1) Reduced time of macrocycle synthesis by ¼
2) Exponential increase in a diverse array of macrocycles

FUTURE WORK



1) Implementation into a biological assay
2) Drug design
3) Chemotherapeutic agents to combat infectious diseases

ACKNOWLEDGMENT

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