



# **SNS COLLEGE OF TECHNOLOGY**

## **BIOCHIPS**

**K.S Mohan**

**Assistant Professor**

**INFORMATION TECHNOLOGY**



## DEFINITION

- A biochip is a collection of miniaturized test sites (microarrays) arranged on a solid substrate that permits many tests to be performed at the same time in order to achieve higher throughput and speed. Typically, a biochip's surface area is no larger than a fingernail.
- A genetic biochip is designed to "freeze" into place the structures of many short strands of DNA (deoxyribonucleic acid), the basic chemical instruction that determines the characteristics of an organism.
- In addition to genetic applications, the biochip is being used in toxicological, protein, and biochemical research. Biochips can also be used to rapidly detect chemical agents used in biological warfare so that defensive measures can be taken.



# Components

## ❖ The Transponder:

The transponder is the actual biochip implant. It is a passive transponder, meaning it contains no battery or energy of its own. In comparison, an active transponder would provide its own energy source, normally a small battery.

## ❖ The reader:

The reader consists of an “exciter coil” which creates an electromagnetic field that, via radio signals, provides the necessary energy (less than 1/1000 of a watt) to “excite” or “activate” the implanted biochip. The reader also carries a receiving coil that receives the transmitted code or ID number sent back from the “activated” implanted biochip.



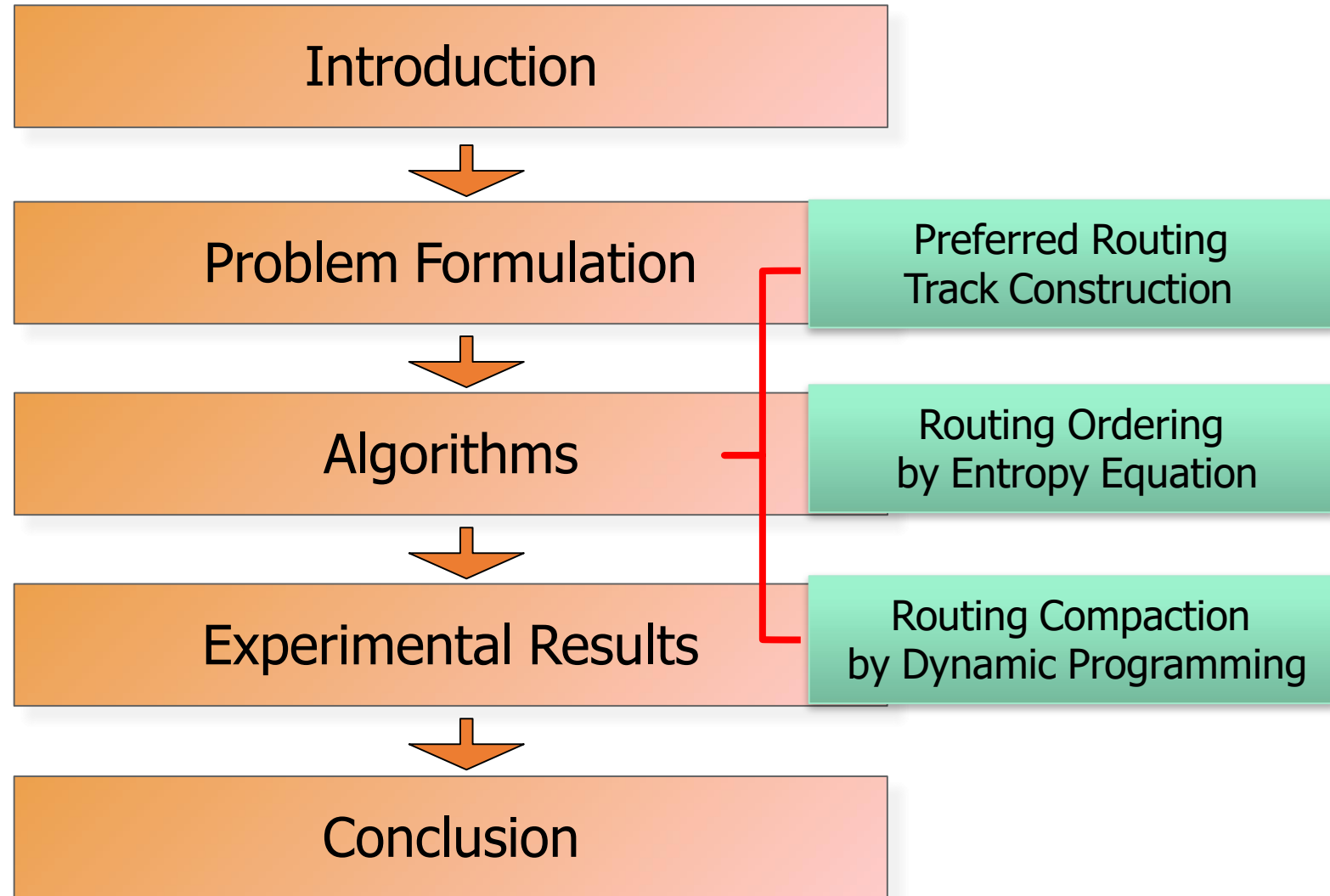
# How it works

- The reader generates a low-power, electromagnetic field, in this case via radio signals, which “activates” the implanted biochip. This “activation” enables the biochip to send the ID code back to the reader via radio signals.
- The reader amplifies the received code, converts it to digital format, decodes and displays the ID number on the reader’s LCD display.
- The reader must normally be between 2 and 12 inches near the biochip to communicate. The reader and biochip can communicate through most materials, except metal.



# Biochip Transponder

- ❖ Computer Microchip
- ❖ Antenna Coil
- ❖ Tuning Capacitor
- ❖ Glass Capsule





# Applications

- ❖ Biochip as Glucose Detector
- ❖ Biochip as an Blood Pressure sensor
- ❖ Biochips really are potent in replacing passports, cash, and medical records



# Advantages

- ❖ To rescue the sick.
- ❖ To find lost people.
- ❖ To locate downed children and wandering Alzheimer's Patients.
- ❖ To identify person uniquely.
- ❖ They can perform thousands of biological reactionsoperations in few seconds.
- ❖ In monitoring health condition of individuals in which they are specifically employed.
- ❖ They can perform thousands of biochemical reactions.





# Disadvantages

- They raise critical issues of personal privacy.
- They mark the end of human freedom and dignity.
- They may not be supported by large % of people.
- There is a danger of turning every man, women, and Child into a controlled slave.
- They can be implanted into one's body without their knowledge.



# CONCLUSION

- ❖ Infotech will be implanted in our bodies.
- ❖ A chip implanted somewhere in human bodies might serve as a combination of credit card, passport, driver's license, personal diary.
- ❖ No longer would it be needed to worry about losing the credit cards while traveling.
- ❖ A chip inserted into human bodies might also give us extra mental power.



# REFERENCES

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K.S Mohan, AP/IT UNIT V -Biology for  
Engineers