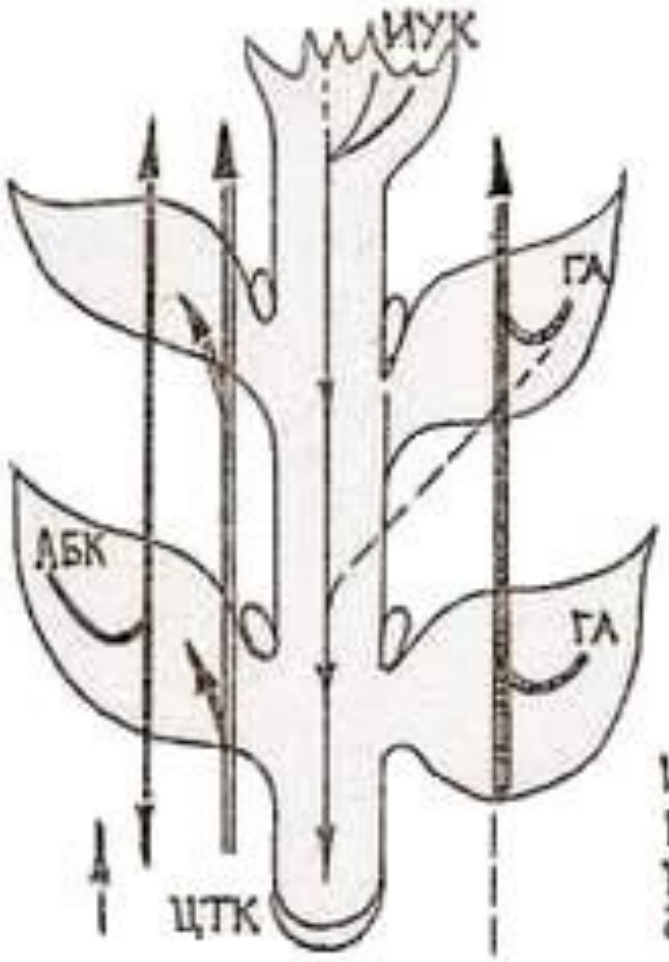
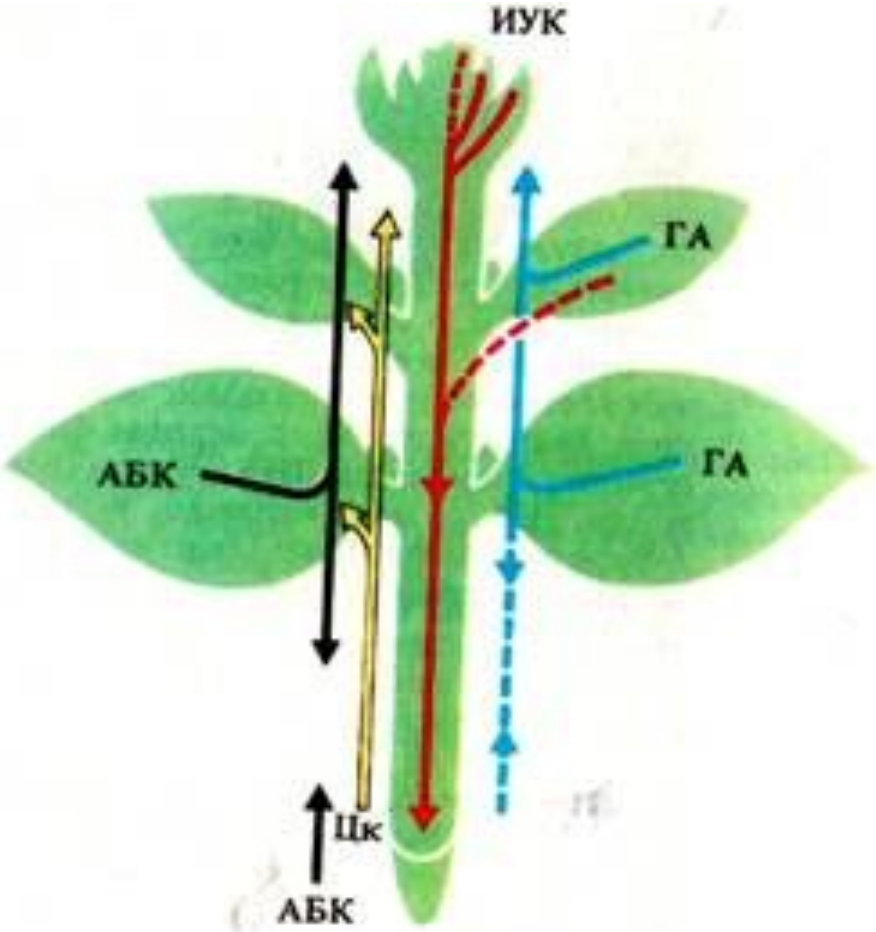

Внешние
сигналы
Цель, механизм регуляции.
Субъект
регуляциииии.
Объект
регуляции.
Выполнен
ия работы
Обратная связь

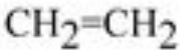


ИУК – АУКСИНЫ
ГА – ГИББЕРЕЛЛИНЫ
ЦТК – ЦИТОКИНИНЫ
АБК – АБСЦИЗОВАЯ КИСЛОТА

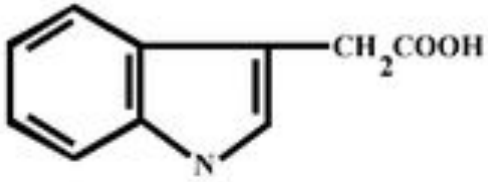

ИУК
ГА
ГА
АБК
Цк
АБК

Plant Hormones (Growth Regulators)

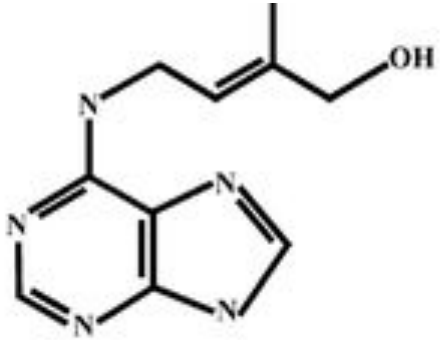
- Auxin
- Cytokinins
- Gibberellins
- Abscisic acid
- Ethylene
- and more…



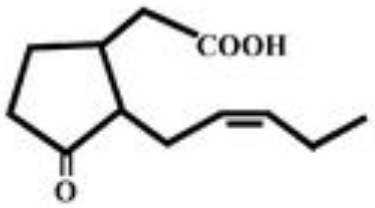
Ethylene



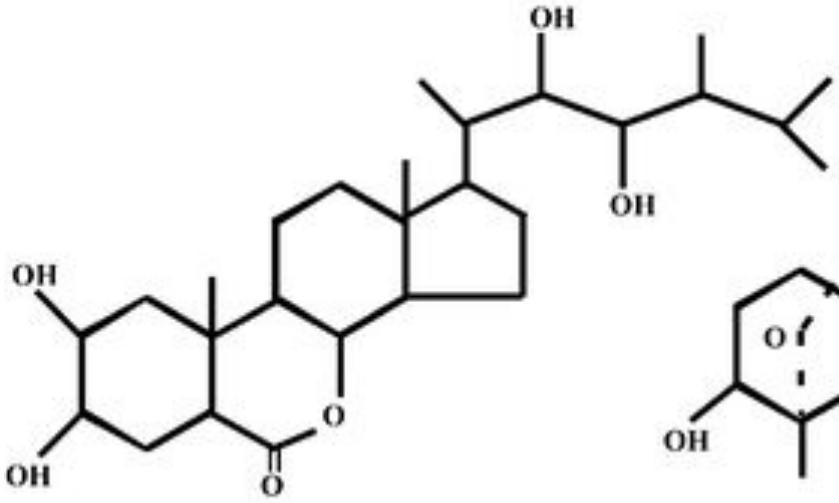
Auxin



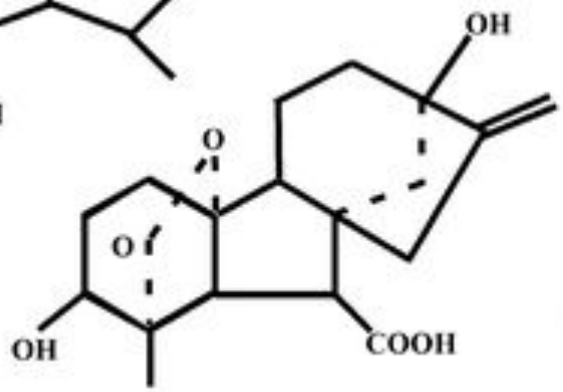
Cytokinins



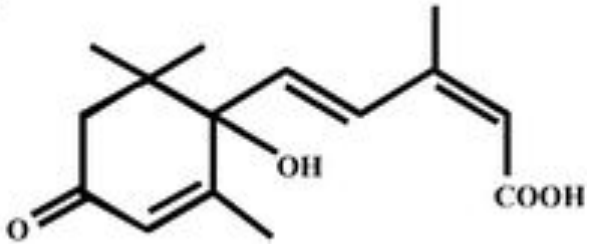
Jasmonic Acid



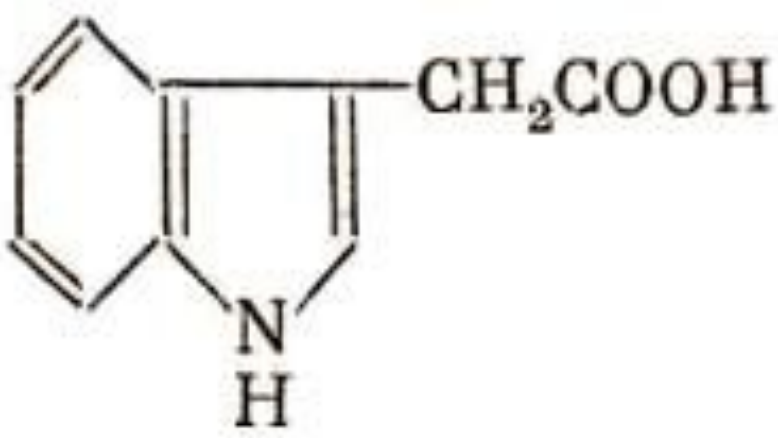
Brassinosteroids

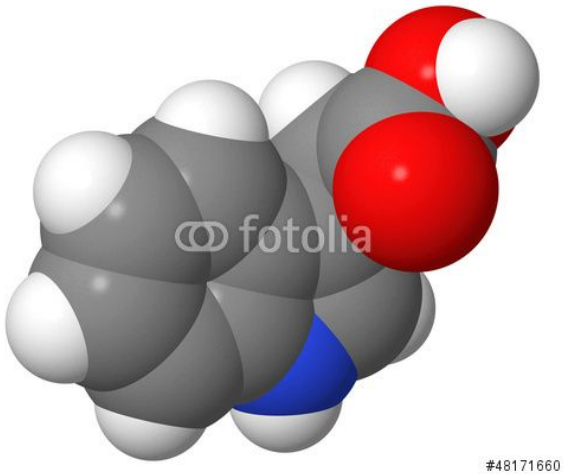


Gibberellins

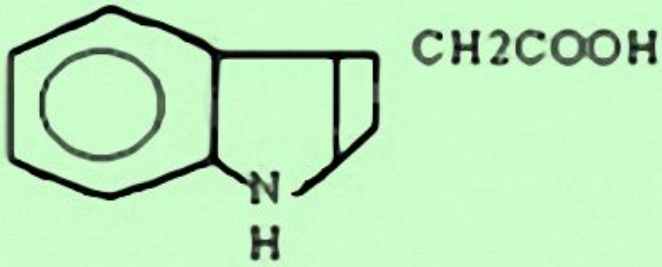


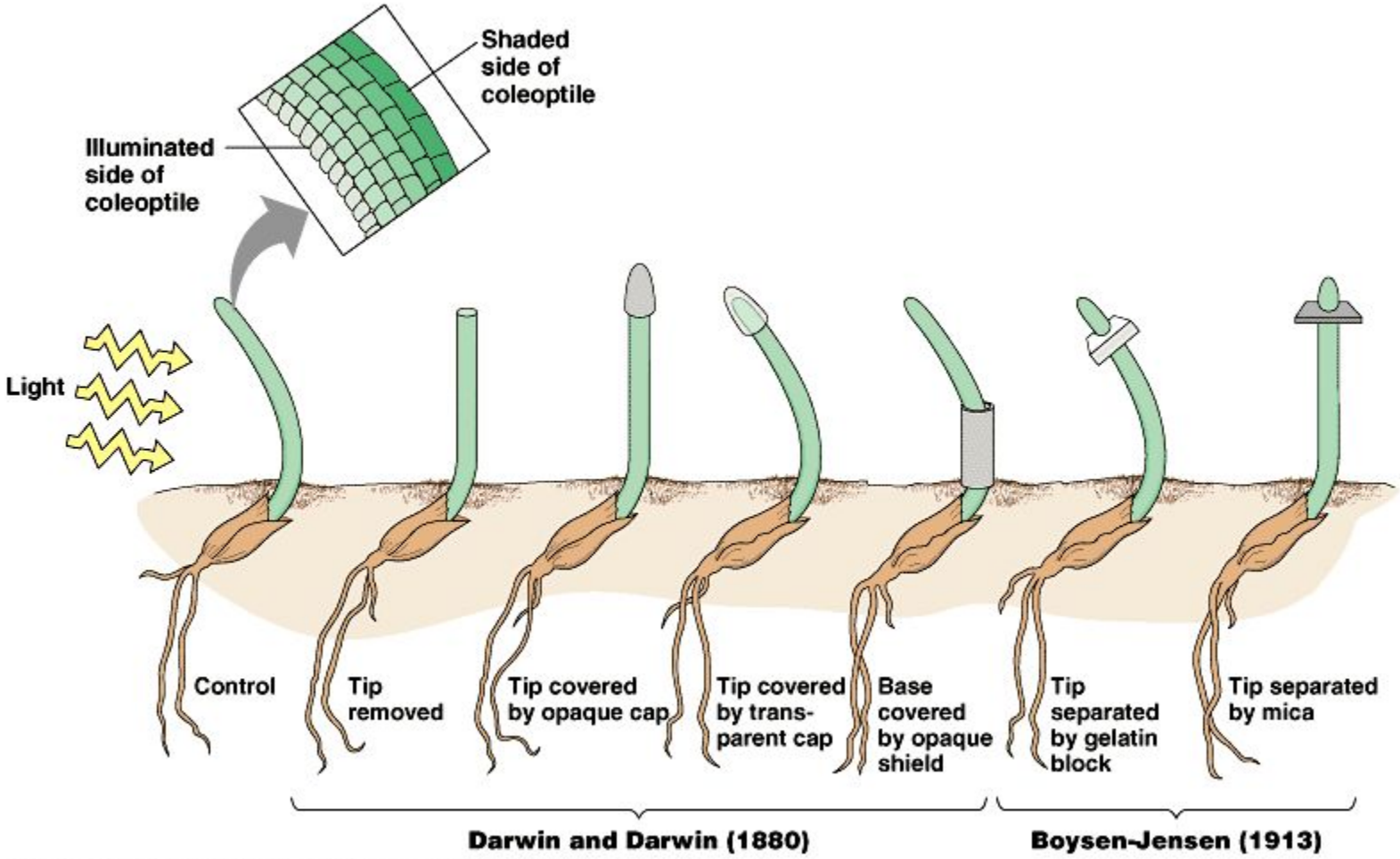
Abscisic Acid



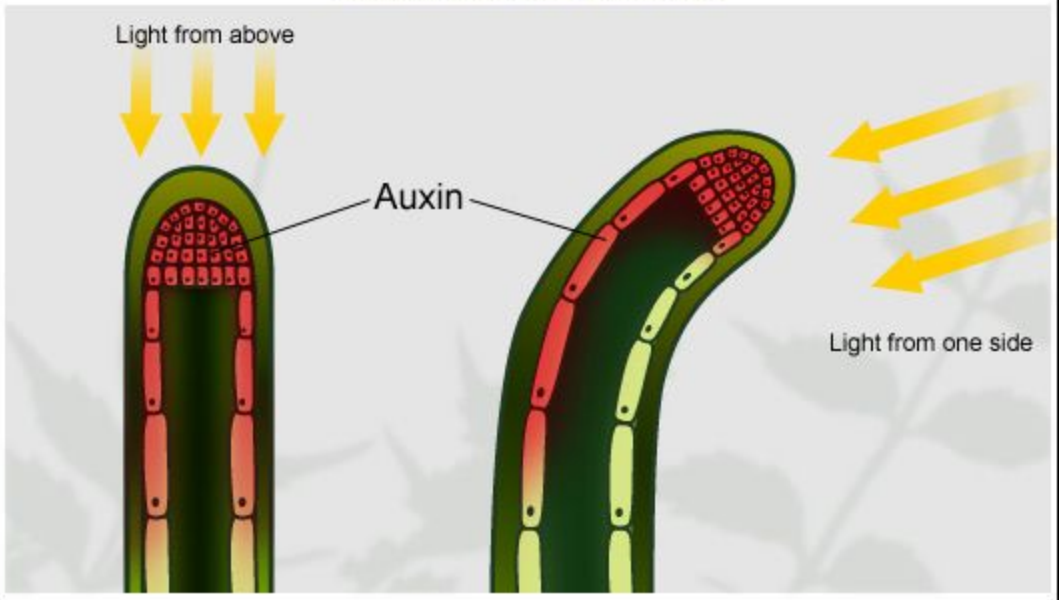


The Auxin : IAA

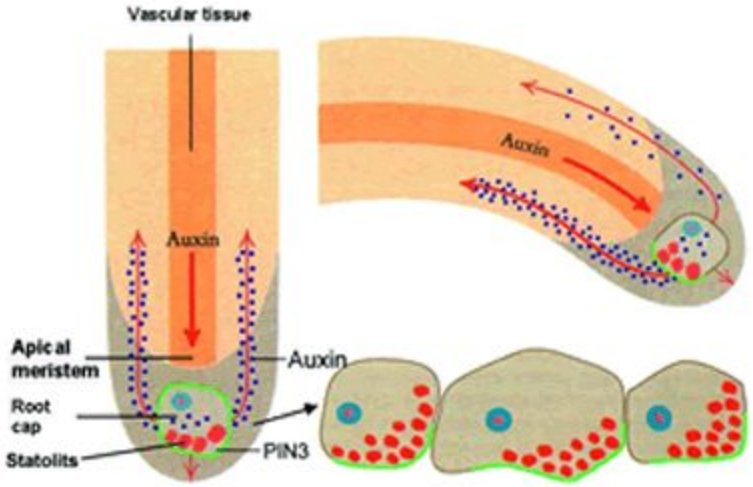


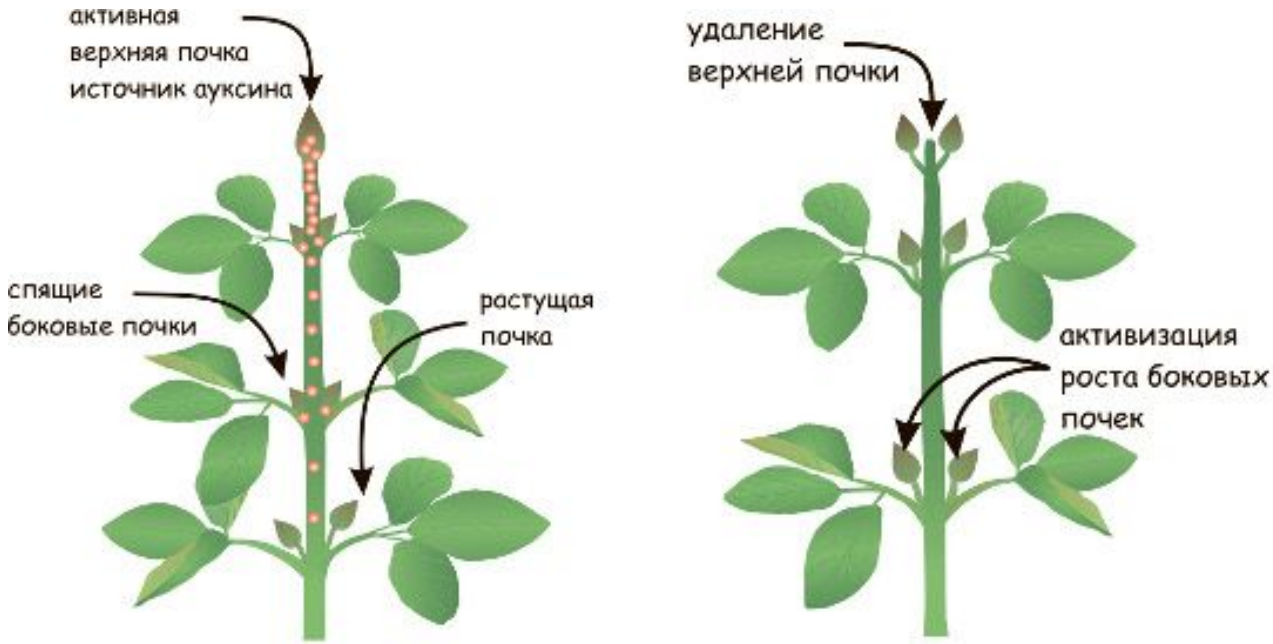


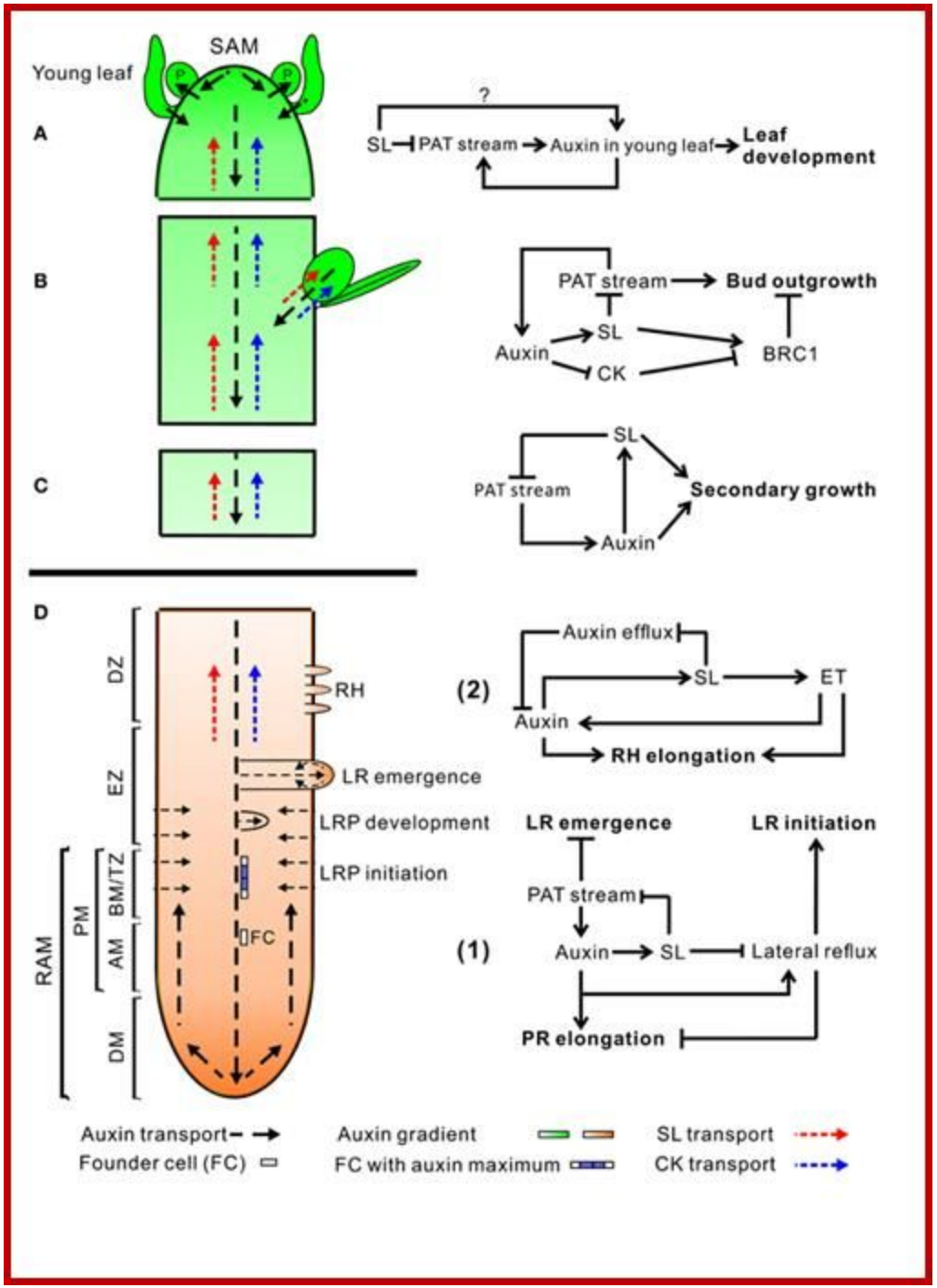
Phototropism: how plants bend



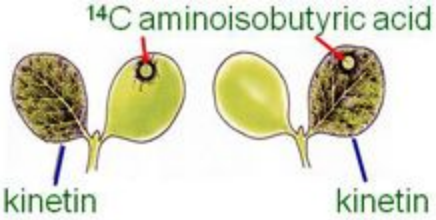
The plant hormone auxin causes plant cells to elongate. When a shoot is directly under light, auxin produced in the growing tip spreads equally down both sides of the plant. If light is from one side only, auxin collects on the shady side causing the cells on that side to elongate. That lopsided elongation produces a bend in the plant stem.


Vascular tissue
Auxin
Auxin
Apical meristem
Auxin
Root cap
Statolits
PIN3

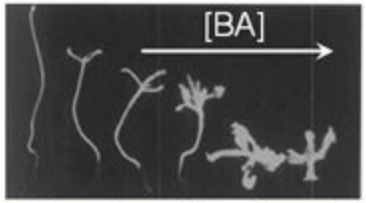

активная
верхняя почка
источник ауксина
спящие
боковые почки
растущая
почка
удаление
верхней почки
активизация
роста боковых
почек


Young leaf
SAM
A
B
C
?
SL
PAT stream
Auxin in young leaf
Leaf development
PAT stream
Bud outgrowth
Auxin
SL
CK
BRC1
SL
PAT stream
Secondary growth
Auxin
D
DZ
EZ
BM/TZ
PM
AM
DM
RAM
RH
LR emergence
LRP development
LRP initiation
FC
(2)
Auxin efflux
SL
ET
Auxin
RH elongation
(1)
LR emergence
LR initiation
PAT stream
Auxin
SL
Lateral reflux
PR elongation
Auxin transport
Founder cell (FC)
Auxin gradient
FC with auxin maximum
SL transport
CK transport

Delay senescence[4]



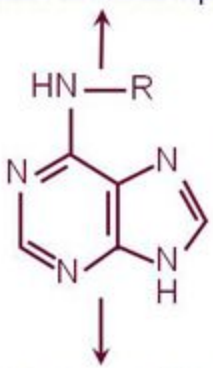
Sink/Source Relationships[5]



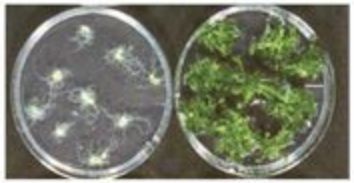
Light-mediated development[6]

Nodulation[3]

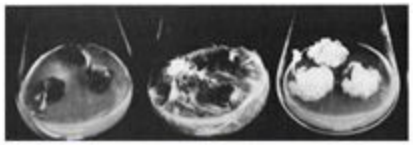
Meristem function[7]



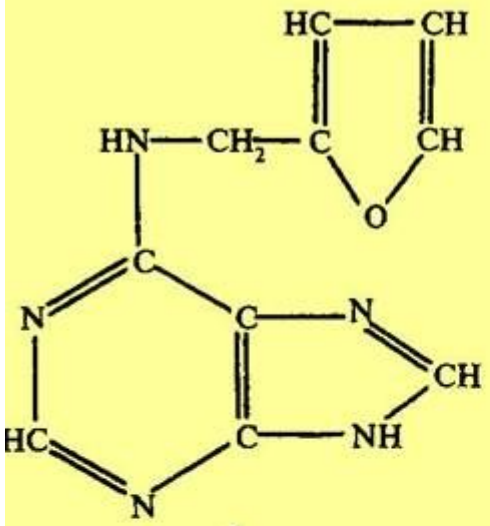
- Nutrient response
- Apical dominance
- Vascular development
- Pathogen interactions



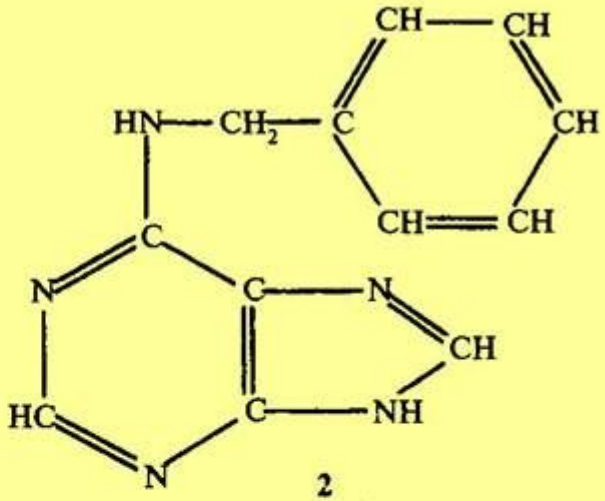
Organogenesis[2]



Promote cell division[1]



1



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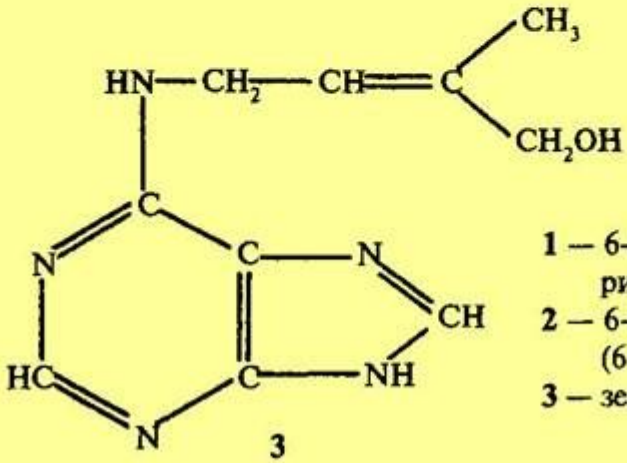
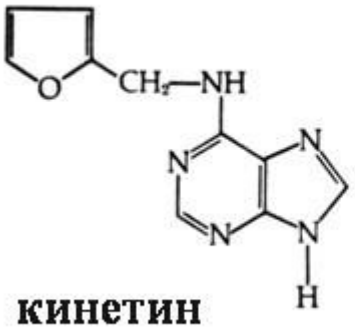


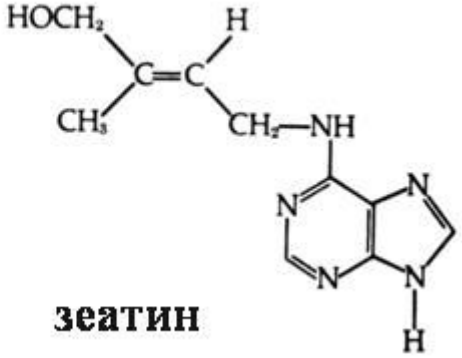
3

1 — 6-фурфуриламинопурин (кинетин);
2 — 6-бензиламинопурин (6-БАП);
3 — зеатин

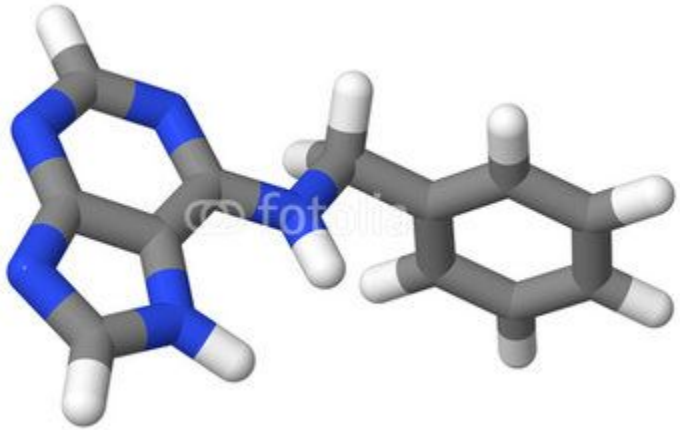
Структура цитокининов

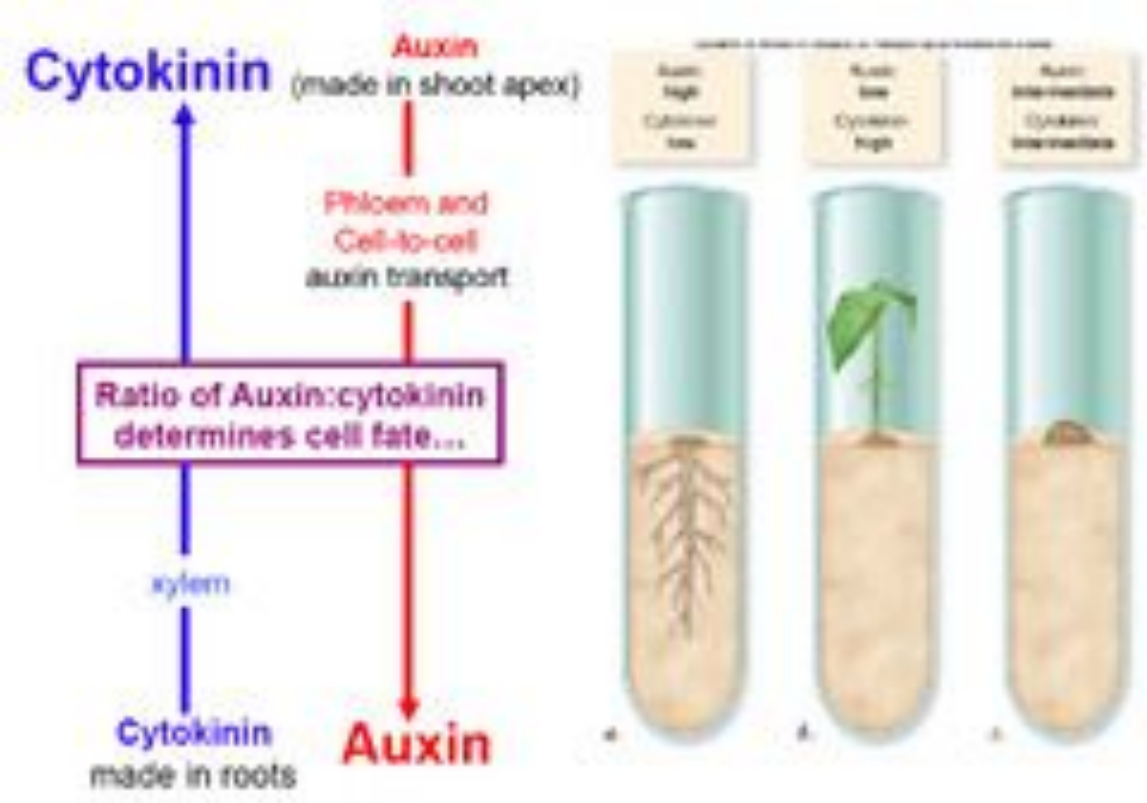


кинетин



зеатин

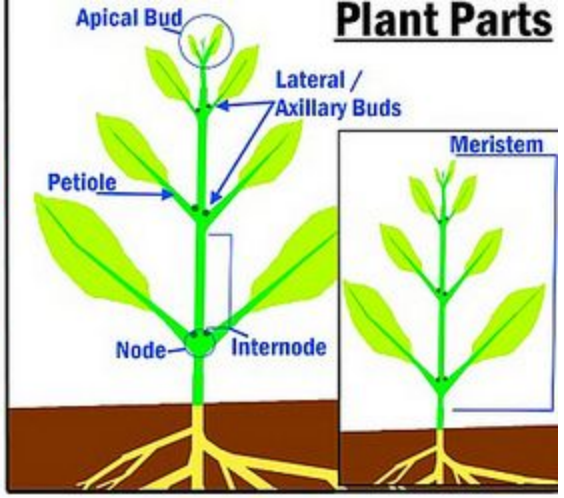


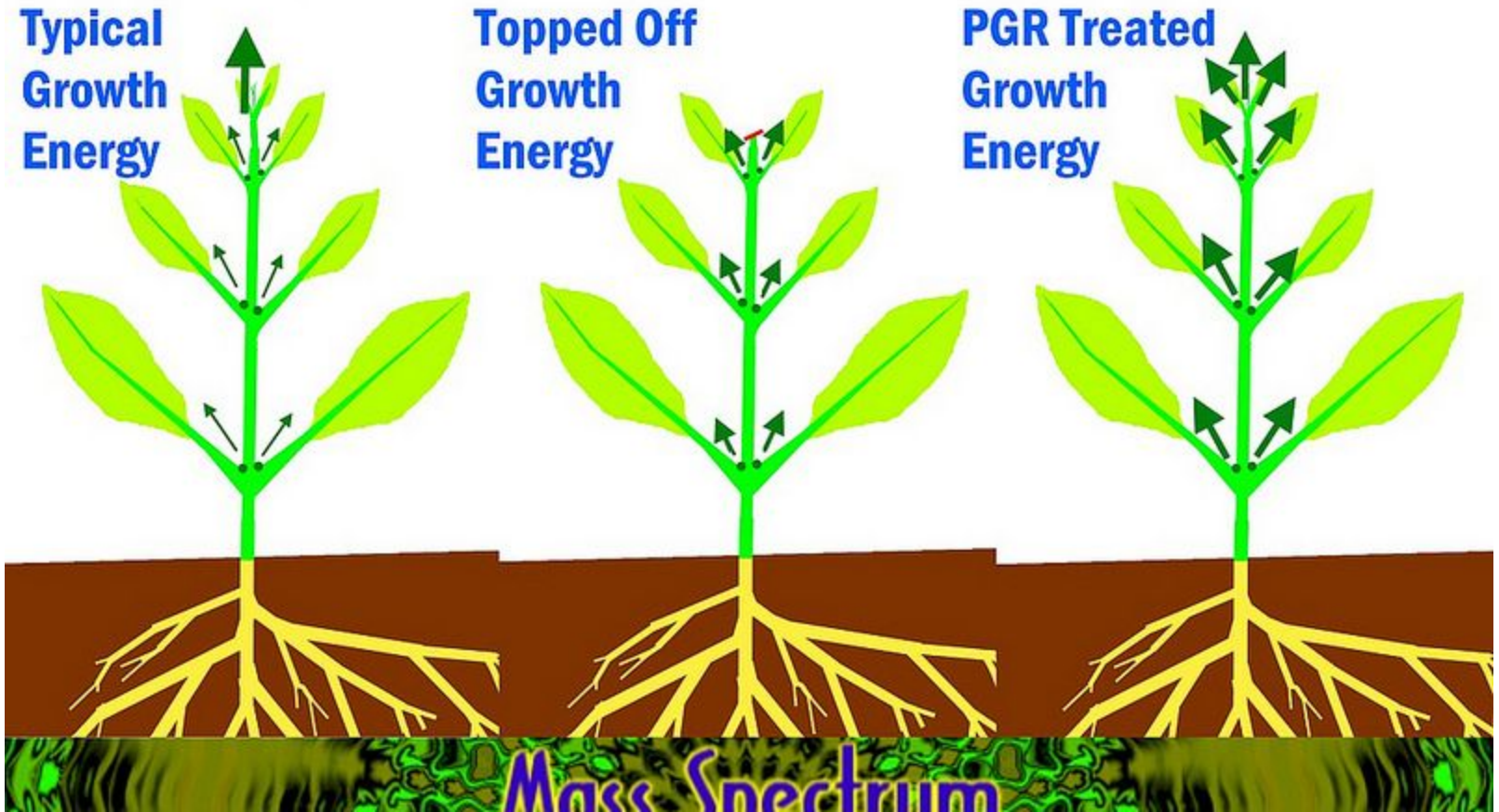

Cytokinin
Auxin
(made in shoot apex)
Phloem and
Cell-to-cell
auxin transport
Ratio of Auxin:cytokinin
determines cell fate…
xylem
Cytokinin
made in roots
Auxin

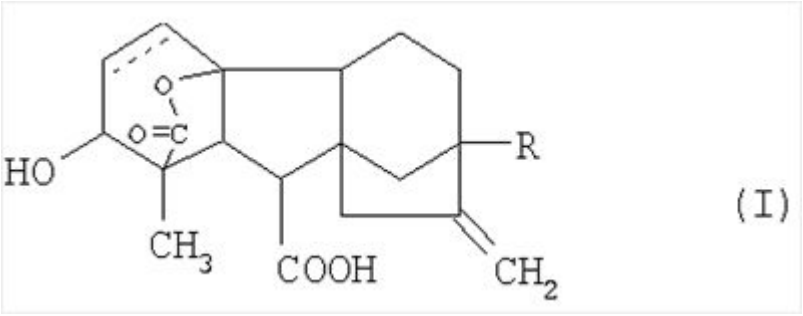
Cytokinin Hormone Effects

To compete in nature plants tend to be programmed to grow straight upwards during initial growth. "Topping Off" the apical bud forces the axillary buds to take off. When cut it causes initial shock to the plant, and it responds by producing cytokinin class hormones as they're what drive axillary bud growth. The shock effect also tends stunt growth for a week or more in virtually all plants.

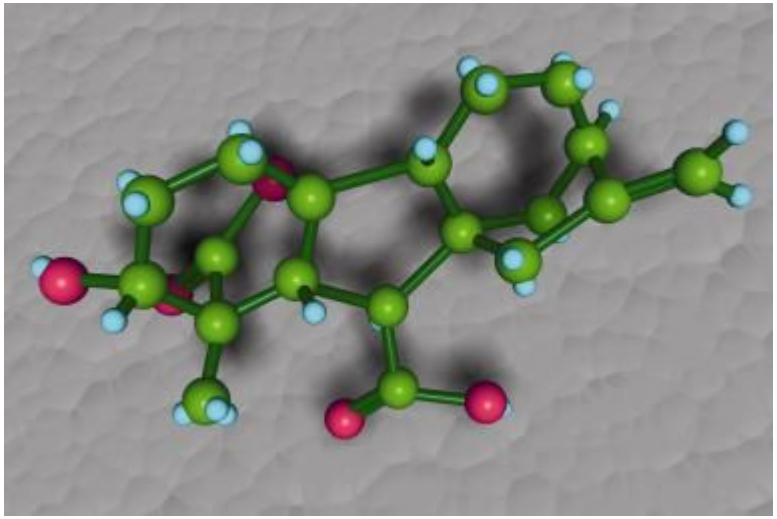
Treating with cytokinins skips the shock effect, allows you to keep the main apical bud while giving an extra growth rate boost beyond typical or topped off rates.

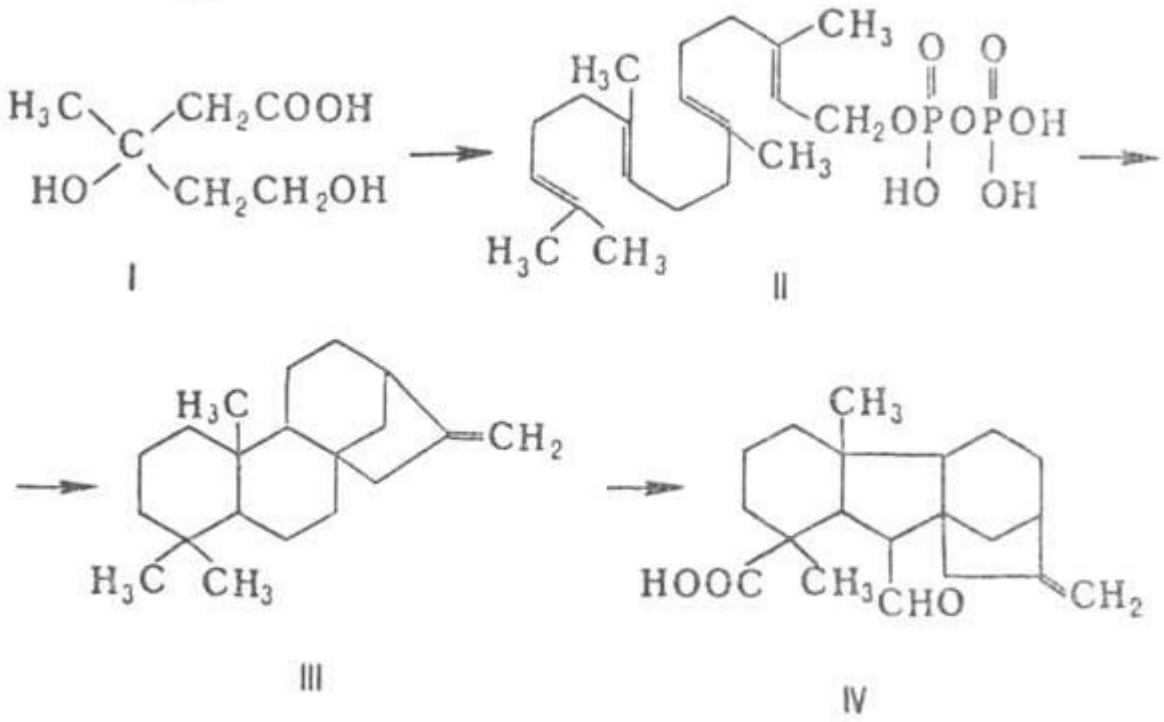


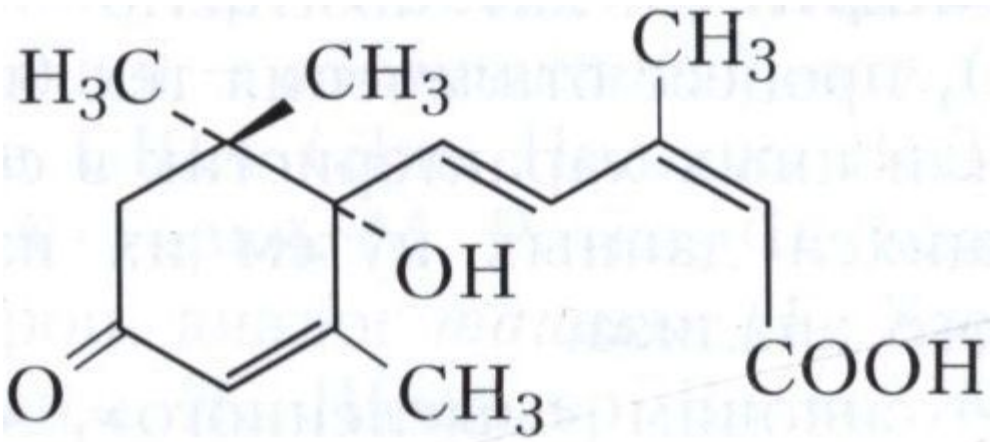




(I)




H3C
CH2COOH
C
HO
CH2CH2OH
I
CH3
H3C
CH3
CH2OPOPOH
O O
HO OH
H3C CH3
II
H3C
CH2
H3C CH3
III
CH3
HOOC CH3
CHO
CH2
IV



Абсцизовая кислота


Окисление
АБК
Гликозид АБК
Рост побега
Покой почек
Регуляция
транспирации листьев
Опадение черешков