Signal Transduction, Development and Its Impacts

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Introd ction

A e ence of me abolic modi ca ion i hin he cell o he al e a ion of he cell memb ane po en ial b he pa age of ion in and o of he cell begin an mi ion. Recep o ha ca e biochemical change can do o ei he di ec l o indi ec l b im la ing in acell la me enge molec le b in in ic en ma ic p oce e i hin he ecep o e e a e fo pe of ignal an d cing ecep o : Recep o ha en e he pla ma memb ane and a e ei he en me a ocia ed o ha e inhe en en ma ic ac i i (En me-linked Recep o)

G p o ein-co pled ecep o a e ecep o ha a e linked o G p o ein i hin he cell (7-TM Recep o)

In acell la ecep o ha change gene an c ip ion di ec l in e pon e o ligand binding (N clea Recep o)

Ligand-gated channels

Ca boh d a e a e a pe of biological mac omolec le p e en in all li ing c ea e e a e a ke o ce of ene g and pla an impo an ole in he c e of pecie . Na e con ain mono accha ide , oligo accha ide , and pol accha ide , hich a e all fo m of ca boh d a e . Ca boh d a e biochemi in e iga e ca boh d a e in e con e ion , n he i , and f nc ion . One of he mo impo an ignalling ph oho mone in plan g o h and eac ion o bio ic and abio ic e e i ja monic acid (JA). i p o ein eg la e oo elonga ion, pollen de elopmen , ge mina ion, f i ipening, and plan ene cence. I al o aid in he defence of plan again di ea e , pa hogen , and abio ic e . Ja monic acid and i me aboli e a e ab ndan in plan cell . e ac i e pe p ec o of ce ain amino acid conj ga e ha e ecen l been di co e ed o be ja mona e . In chlo opla memb ane , a pho pholipa e con e memb ane pho pholipid o -linolenic acid and he adeca ienoic acid, hich i he ep in JA n he i [1]. To make JA f om he -linolenic acid p ec o , he oc adecanoid pa h a i ed. A chlo opla ic 13-lipo gena e o idi e linolenic acid, i p od ce he 13-h d ope o de i a i e. Si gene in he A abidop i genome code fo lipo gena e . e n he i of JA i eg la ed b h ee of he e gene (LOX2, LOX3, and LOX4). e n he i of JA begin in he pe o i ome [2]. e ba ic-heli loopheli -ba ed an c ip ion fac o ha make p he ignal an d c ion pa h a In hi model, JAZ p o ein deac i a e MYC2 in he ab ence of bioac i e JA . JA-Ile ca e deg , hich i media ed b SCFCOI1. Ja monic acid aid in plan g o h and ep od c ion. Sene cence ind c ion, o al de elopmen , g o h inhibi ion, endon coiling, f i ipening, po a o be i a ion, f ngi a b c la m co hi al in e ac ion, and ichome fo ma ion a e all nece a ph iological p oce e [3]. Acco ding o X e and Zhang, ja monic acid al o eg la e he mo phogene i of o bean lea e and oo . Ja monic acid i ho gh o con ol male fe il and MYB24 and MYB21 media e amen elonga ion and an he de elopmen . Plan ho mone ch a alic lic acid, ja monic acid, and e h lene, hich ha e a ignalling f nc ion in plan defence con ol em , eg la e c op e pon e o bio ic and abio ic p e e , in addi ion o he ole of c ological and molec la gene ic ma ke in c op imp o emen .

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