

of the antibody ~~is~~ ^{may} not act by influencing the amino acid sequence of the ~~chain~~ ^{polypeptide} chain which carries the specificity, but ~~rather~~ ^{presumably}

~~rather they may be presumed to act by~~ ^{being responsible} which are responsible either directly, or, more ~~likely~~ ^{likely}, indirectly through the production of an enzyme, for a production and coupling to ~~of a small molecule such as a~~ ^{of a small molecule such as a} the antibodies) of ~~some carbohydrate, say,~~ ^{some} hexose, pentose, or a small

polysaccharide molecule which confers on the ~~an~~ antibody the antigenic determinant ~~by responsibility for the~~ ^{that ~~it~~ confers on it its allotype} type. Obviously, if

~~this is the case, then it appears paradox that the gamma globulins of~~ ^{In these circumstances} the heterozygote ~~are of the type~~ ^{Ab/} ~~aB and aB~~ ^{aB} and ~~that~~ ^{the} other types ~~aB and aB~~ ^{aB and aB} are missing. ~~In order to explain~~

this phenomenon I ~~am~~ ^{propose} led to postulate that a marked ~~is~~ ^{responsible for} are carried ~~on one pair of homologous chromosomes~~ ^{and the few responsible for the specificity of the antibody} and that in the cells of the lymphatic system somewhere along the development of the individual ~~one of these two homologous chromosomes suppresses the other.~~ ^{on the same pair} ~~This~~ ^{is the same pair of chromosomes} ~~presumably occurs in the different cells which is not very different~~ ^{embryonal We may assume that}

~~from 50%~~ ^{remains} so that in a substantial number of the lymphatic cells it is one of the two ~~main~~ ^{remains} homologous chromosomes which ~~is~~ ^{is} functional and in a substantial number of the ~~lymphatic~~ ^{lymphatic} cells it is the other chromosome which ~~is~~ ^{remains} functional. The number of lymphatic cells in which both chromosomes remain functional might not be appreciable. ~~free~~ ^{Presumably one}

~~such a chromosome became~~ ^{suppressed} in a ~~lymphatic~~ ^{lymphatic} cell, thereafter ~~it remains~~ ^{it remains} suppressed in all the descendants of the cell.

(crossing over chromosomes)

The suppression of ~~one~~^a chromosome by its homologous chromosome has so far been established only in the case of the X-chromosome of the female where, generally speaking, in most of the somatic cells one of the two X-chromosomes suppresses the other fairly early during embryonal development. Thereafter, when ^{such} a somatic cell ^{doubles} the suppressed X-chromosome remains suppressed, forms ~~an~~^{the} ~~EX~~^{sex-} chromatin body and is late replicating. Generally speaking, the ~~pat~~ paternal

X-chromosome and the maternal X-chromosome suppress each other with equal probability, ^{but there are exceptions for} within individual clones of somatic cells the ^{this one} same X-chromosome, ^{er} either the paternal or the maternal, forms ^{is abnormal} this X-chromatin body. ^{assumed to carry} The chromosome ^{antibodies which} which carries the genes ^{with that} which are responsible for the formation of the specific antibody form a

^{are specific for a} number of known antigens and that also carries the two allotype ^{as well as} ~~loci~~ ^{determining genes} ~~is presumably not so and there is no evidence to show that an~~ ^{pseudous} ~~antibody~~ ^{an antibody and antibody} can be suppressed by the homologous ~~antibody~~. We have postulated the suppression of this ~~antibody~~ ^{antibody} by the homologous ~~antibody~~ ^{antibody}

~~ed has~~ in order to resolve the paradox described above and we must now examine whether this postulate ^{may be} ~~is~~ borne out by ^{other} ~~different~~ immunological experiments.

There are two experiments which appear to fit in ^{very} well with our postulate: ^{Kunitz} ~~CB~~ ^{has} found that in ^{of the bovine globulins} rabbit

which is heterozygous for the allotype the antibody formed to ^{an} ~~the~~ ^{artificial} ~~specific hapten~~ ^{Provine Serum Albumine} ~~hepatin~~ which is coupled to ^{belongs to the allotype}

, whereas the gamma globulins of the rabbit contains ^{one of} ~~two~~ both allotypes and ^{may} ~~We are inclined to~~

interpret ^{this} ~~that~~ by saying that the gene which is responsible for the formation of the ^{polypeptide} ~~pp~~ chain which is ^{specific for the hapten} ~~subsequent~~ to the heparin

is carried only on the chromosome which carries the allotypic marker ^{of the} ~~and that the homologous chromosome which carries~~ ^{artificially which is specific for the hapten}

markers for the other allotype
 the allotypic marker ~~must~~ lacks this gene. On this basis
 we are then predicting that the rabbit cell homologous for the allotype
~~is~~ ~~rather allotype~~ ~~are~~ ~~humorous~~ ~~are~~ ~~incapable~~ of forming the antibody that is
 specific for the ~~hepatin~~ ~~happen~~.

~~Or~~ ~~is~~ ~~has~~ found that when he injected ~~it~~ into a new-born rabbit
 which ~~was~~ heterozygous for ~~the~~ allotypes ~~is~~, sheep

antibody against rabbit gamma γ globulins of this allotype, ~~after a few~~
~~months~~ ~~when~~ the rabbit was capable of producing gamma globulins the
~~gamma globulins~~ ~~lacked~~ the allotype ~~is~~ ~~then~~ ~~forms~~ ~~antibodies~~ ~~in~~ ~~response~~
~~to~~ ~~the~~ ~~injection~~ ~~of~~ ~~novel~~ ~~antigens~~ ~~these~~
~~antibodies~~ ~~belong~~ ~~to~~ ~~the~~ ~~other~~ ~~allotype~~. ~~If~~ ~~we~~ ~~assume~~ ~~that~~ ~~all~~
 in a certain fraction, not too different from 50% of the lymphatic cells

~~of the rabbit which are potential antibody forms, the chromosome carrying~~
~~allotypic markers~~ ~~was~~ ~~suppressed~~ ~~and~~ ~~that~~ ~~these~~ ~~cells~~
~~which produced gamma globulin of the allotype~~ ~~were~~ ~~prevented~~
~~from dividing by the presence of antibody against the rabbit gamma globulin~~
~~of the allotype~~ ~~then~~ ~~we~~ ~~can~~ ~~readily~~ ~~understand~~ ~~why~~ ~~when~~ ~~the~~
~~rabbit produced antibodies, all~~ ~~of~~ ~~the~~ ~~antibodies~~ ~~were~~ ~~of~~ ~~the~~ ~~allotype~~

~~We~~ ~~may~~ ~~explain~~ ~~this~~ ~~in~~ ~~the~~
~~cases~~ ~~of~~ ~~our~~ ~~postulate~~ ~~by~~
~~saying~~ ~~that~~ ~~those~~ ~~lymphatic~~
~~cells~~ ~~in~~ ~~which~~ ~~the~~ ~~chromosome~~
~~carrying~~ ~~the~~ ~~allotype~~ ~~for~~ ~~which~~
~~allotypic~~ ~~markers~~ ~~for~~ ~~which~~
~~the~~ ~~antibody~~ ~~was~~ ~~suppressed~~ ~~is~~ ~~the~~ ~~chromosome~~

~~was~~ ~~suppressed~~ ~~by~~ ~~the~~ ~~presence~~ ~~of~~ ~~antibody~~ ~~against~~ ~~the~~ ~~antigen~~ ~~to~~ ~~which~~ ~~it~~ ~~was~~ ~~producing~~ ~~antibody~~
~~or~~ ~~prevented~~ ~~from~~ ~~dividing~~ ~~by~~ ~~the~~ ~~presence~~ ~~of~~ ~~antibody~~ ~~against~~ ~~the~~ ~~antigen~~ ~~to~~ ~~which~~ ~~it~~ ~~was~~ ~~producing~~ ~~antibody~~
~~and~~ ~~was~~ ~~not~~ ~~able~~ ~~to~~ ~~divide~~ ~~because~~ ~~of~~ ~~the~~ ~~presence~~ ~~of~~ ~~antibody~~ ~~against~~ ~~the~~ ~~antigen~~ ~~to~~ ~~which~~ ~~it~~ ~~was~~ ~~producing~~ ~~antibody~~
~~cell~~ ~~in~~ ~~which~~ ~~this~~ ~~chromosome~~ ~~was~~ ~~kept~~ ~~suppressed~~ ~~by~~ ~~the~~ ~~presence~~ ~~of~~ ~~antibody~~ ~~against~~ ~~the~~ ~~antigen~~ ~~to~~ ~~which~~ ~~it~~ ~~was~~ ~~producing~~ ~~antibody~~
~~by~~ ~~the~~ ~~presence~~ ~~of~~ ~~antibody~~ ~~against~~ ~~the~~ ~~antigen~~ ~~to~~ ~~which~~ ~~it~~ ~~was~~ ~~producing~~ ~~antibody~~
~~was~~ ~~not~~ ~~as~~ ~~expected~~

affected by his sheep serum
and ~~could~~ would produce anti
body of the corresponding
allotype.

~~Multiplet~~ On the basis of our
postulate one would expect that
in multiple myeloma - 5
~~which~~ in which a ~~few~~
IgG protein is ^{there is a common}
product of a few IgG
protein. ^{all} This protein ~~is~~ should
belong to the same allotype
~~even in hetero~~ even in individuals
which are heterozygous for
allotype. This seems indeed
to be ~~the case~~ in the
vast majority of the cases.
Primarily in ^{the} multiple
myelomas all ^{the} myeloma
cell are derived from a single
cell which has become independent