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Salmonella Taxonomy	Version: 1	Ref: NSRLFM041
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Salmonella Taxonomy

The Kauffmann-White scheme for designation of *Salmonella* serotypes is maintained by the WHO at the Institut Pasteur in Paris.

Salmonella serotype is based on immune reactions with two surface structures. O antigen is a carbohydrate antigen and is the outermost component of lipopolysaccharide. Isolates can lose the O antigen and become “rough”, i.e. cross-reactions will occur with other antisera.

H antigen is a protein antigen called flagellin which is present in the flagella. *Salmonella* is unique among enteric bacteria in that it can express two different flagellin antigens. Monophasic isolate are those that express only a single flagellin type. These occur naturally in some serotypes, e.g. *Salmonella* Enteritidis, or can occur through the inactivation of the gene encoding the Phase 1 or Phase 2 antigen.

The genus *Salmonella* is divided into two species, *Salmonella enterica* and *Salmonella bongori*. *Salmonella enterica* is further subdivided into 6 *subspecies* that are designated by names or, more commonly, Roman numerals. These are differentiated by biochemical reactions. *S.bongori* is generally referred to as *sub. V*.

<i>S.enterica subspecies</i>	
I	<i>enterica</i>
II	<i>salamae</i>
IIIa	<i>arizonae</i>
IIIb	<i>diarizonae</i>
IV	<i>houtenae</i>
VI	<i>indica</i>

Subspecies I is present in both warm and cold blooded animals while the other *Salmonella subspecies* are generally associated with cold-blooded animals.

There are over 2500 *Salmonella* serotypes of which approximately 60% belong to *subspecies* I. These account for about 99% of human infections.

All *Salmonella* serotypes can be designated by an antigenic formula, i.e. *subspecies* O antigens: Phase 1 H antigen(s): Phase 2 H antigen(s)
e.g. I 8,20:i:z6

subspecies I serotypes are given a name, e.g. Kentucky in the above example while other *subspecies* are not named.

The official name for an isolate with the antigenic structure 4,5,12:i:2 is *Salmonella enterica subspecies enterica* serotype Typhimurium. However this is normally shortened to *Salmonella* Typhimurium.

If an isolate is from *subspecies* II-VI this will be noted in the NSRL report.