About Pleomorphism

by Dr. med Maria Bleker, Germany

The team "Enderlein Live" has taken upon itself the task of publishing those central and largely unknown works of Professor Enderlein's which it considers important for an understanding of Enderlein's theoretical concepts. The text which follows was published by Professor Enderlein in 1933, and was intended as a rebuttal to the old thesis of Virchow's, largely held to this day, that "the cell is the smallest biological unit."

With the discovery of the Protits and the precise description of the various development possibilities of these protein nodules, Professor Enderlein created the bases for the interpretation of phenomena which we, now as then, can observe using dark-field microscopy. This article is also intended to clarify who is entitled to primacy in the discovery of these protein nodules. Certain recent "researchers" have made an unseemly practice of anointing themselves as the discoverers of these Protite and their development stages, simply by baptizing them with a new name, such as Somatid, Spore, etc. It would be not only more logical but also more ethical if they were to dedicate themselves to the interpretation of these phenomena and their immunological significance, rather than persisting in these fraudulent labeling practices. In order to promote a better understanding of the following text of Professor Enderlein's, a glossary has been added following this article which explains the professor's terminological concepts.

The Construction of Chlamydozoit and Morulit from the Chondrit

To this day, the cell is regarded as the ultimate organic unit, out of which all higher organisms are built up. Even Haeckel believed he had found the proto-organism in the one-celled protozoans.

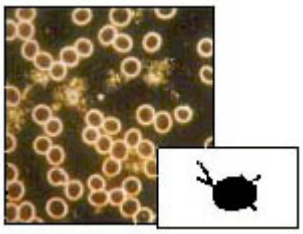
When I formulated the concept Symprotit and its sub-unit Protit as the primeval unit of life in the form of a quite homogeneous minuscule kernel as recognized phenomenological forms of bacteria up to the outer limits of visibility, it had been well proven by their reproductive ability that these were living organisms. But all connection was lacking between these subvisible units and the higher forms of the bacteria, to say nothing of a connection to cells, which wasn't even under consideration. For this, long years of study of their living conditions were required - and the necessary culturing experiments which were repeated in endless series over and over again. I chose as my experimental object of study the Microsphaera vaccinae (Cohn 1872), bred from various vaccine lymphs (of which it's quite irrelevant whether or not it is the cause of smallpox, as even the discoverer of this species assumed).

What we are dealing with here is a preliminary sketch of a few excerpts from the results of these developmental-historical and comparative-morphological studies; the detailed main publication with numerous illustrations will appear in the indicated venue.

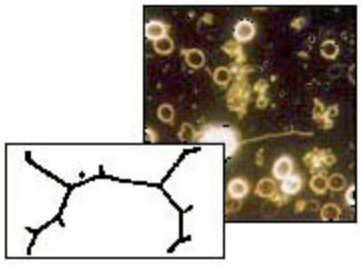
The Microsphaera vaccinae (Cohn 1872) in its typical phenomenological form is a micrococcus usually about 0.5-0.6 µ long, which nevertheless represents a Thecit and not a primary Basit (even though it is a Basit, albeit a pliovalentes one). If one puts the material of a culture of this strain in a hanging drop, then it will very quickly develop (usually beginning after just a few seconds) a mass of Chondriten, usually growing rapidly, especially when the starter material is from an older culture. By culturing material from one of these hanging drops, one can easily create isolated colonies of the Chondritstadiums, but they are only visible after a few days (and with a magnifying glass) as extremely tiny colonies among the large Thecites colonies. However, they can be isolated even sooner by simply swabbing the areas between the large colonies.

Over the years, I have steadily cultured the Thecit in numberless series out of the pure cultures of the Chondritstadiums, so that the total material of Microsphaera vaccinae (Cohn 1872) at my disposal has to a certain extent been complexly filtered. The creation of the Thecites usually takes place over weeks to months, so that a dispersion of individual Theciten, which would grow to large colonies in a single day, is out of the question.

Isolated Chondrite quickly grow in hanging drops into entire systems alternating between Symprotit and Filum, as shown here. The Symprotite here can already take on quite varied sizes. Since the Filum is capable of renewed granule formation (Symprotit) at many different locations, one after the other, it is reasonable to conclude that the Filum is a linear arrangement and organization of the final unit, the Protites.The alternation between the two growth forms of the Chondritstadiums is thus an alternation between a growth form with linear arrangement of the Protite (Filum) and one with three-dimensional arrangement of the same (Symprotite). The diameter of the Filums - about 0.02 µ or even less - is accordingly the diameter of the free Protites. But whereas the Filum - except with dark-field illumination - is usually only visible as it blinks when the mirror is moved, presumably the Protit alone is no longer clearly recognizable; only accumulation gives rise to a pocked surface, which, much like the Filum, is accounted for by the light-diffracting processes. With longer observation periods, one can now and again notice an increase in thickness - which, however, since it is usually irregularly bounded, could be due to the expulsion of individual Protiten. Even in these masses, more robust granules (Symprotite) can be formed here and there.



But the Symprotit, which is based on a three-dimensional union and organization of Protiten, can also excrete these free accumulated Protite. This generally occurs after a few days, and these loose plasma masses cling to the Symprotit in the form of an extremely fine to extended calotte: the

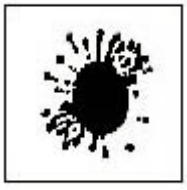


plasma coat.

The first phase of the socialization of two development stages to a new unit is complete. The Symprotit becomes the parietal nucleus (Mych), the Protitanhäufung becomes the fluid plasma, the plasma coat, and the new unit is the cell-like Mychit. The auxanogene (i.e. multiplicative) development, takes places in the alternation of Mychit and Dimychit; here, with these fission processes, the Filum has lost its mobility during its lengthening growth and has shortened to a filament in the confined space of the fluid plasma, the plasma coat. If yolk masses (reserve materials such as lipids, nucleic acid derivatives, etc.) are stored up in the Mychit, then it is chiefly on the surface of the Mych (nucleus) in the form of Trophosom (or Trophosomelle) and of the filament in the form of Trophode. I have already treated this in more detail for other bacteria (Sitzungsber. Ges. naturf. Fr. [Session reports of the society of friends of natural-science research] Berlin 1931, pp. 87-88 and Arch Entw. Bakt. [Archive for the developmental history of bacteria] I, 1, 1931 pp. 53-104). There is no need here to go into more detail on the further course of Probaenogenie to Phytit, Rhabdit, etc., since it is not relevant to present goals, and since these processes are common to all higher bacteria.

It remains only to mention that here, too, in the Microsphaera vaccinae (Cohn 1872), the formation of the spherical or slightly ovoid Cystite (with a Mych or Symmychon), Thecite (with several Mych or Symmycha) and Chondrothecite (with very numerous minuscule Mych, belonging to the Protit or Symprotit) is consummated mostly on Synasciten, but also on Mycasciten, as is usually the case, but in this species, these structures can also be formed freely, which is not otherwise normally true.

It is necessary to interject something at this point. In spite of years of culturing Microsphaera vaccinae (Cohn 1872), it has never been possible for me to achieve the Chlamydozoon Prowazeks, and it was then that I began to entertain serious doubts that this organism could be the smallpox pathogen, at least not in the sense of Paschen, where the fact of infectiousness must derive from filtrates of smallpox material; nonfiltrable forms were now out of the question, which has never, as is known, been interpreted in this form for the tubercle bacillus. On the other hand, the lack of infectiousness of the Microsphaera vaccinae (Cohn 1872) for the generation of a typical smallpox can in no way constitute disproof that this phenomenological form belongs to the smallpox pathogen, since of course the genuine smallpox, transmitted to cattle, normally no longer yields any more typical smallpox organisms, but rather vaccine. Then again, Calmette and his disciples gladly renounce - for the BCG strain, no less - the generation of a typical tuberculosis. We know far too little concerning these biological relationships to be able to deal with them confidently, even though the nucleus size, the Dynamovalenz, is crucially significant in this context. In fact, Guarneri's corpuscles attain larger forms than possible with any artificial breeding, and their extreme infectiousness is well enough known.

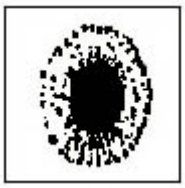


Now, the blood of smallpox patients - as also that of other

patients - is subject to definite, though small, deviations in alkalinity. Marotta (Riv. clin. terap. Napoli 1887, pp. 561-77) was the first to demonstrate that this is more strongly alkaline - and, at the same time, that the organism he had detected (also a micrococcus, probably the same one) reacts strongly to small amounts of sodium bicarbonate.

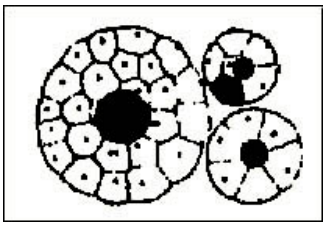
As soon as I learned of this, I immediately investigated old cultures of the Microsphaera vaccinae (Cohn 1872) in hanging drops of 2-5% soda solution and took smears - and in a few minutes I had the Chlamydozoon Prowazeks, which had never turned up in years of culturing, and which thus as Chlamydozoit (Fig. 5) represents a development form in the Cyclode of the Microsphaera.

I had been lucky, though, since the starting material has to be from older cultures, in which the Dynamovalenz has attained a high value, in order to be able to produce the nuclear material for the many structures necessary in this process.



The process is as simple as can be. The formation of a large number of Chondritfäden out of a Thecit, as illustrated in fig. 3, is already well known from the processes in any hanging drop in a physiological saline solution. This accumulates in a 2-5% soda solution more and more, so that finally in the extreme, and above all for especially large Theciten, the Chlamydozoit is built up, as shown in fig. 5. By the very nature of the process, one will find many transitional forms, of which one is reproduced in fig. 4.

A membranaceous exterior seal arises via concatenation of the Endsymprotite to a durable membrane. This process can ultimately escalate further to an extensive formation of larger such Mychite around the central Thecit, which then attain considerable size and a raspberry-like appearance: the Morulit fig. 6.



We have now traced the creation of a cell from the homogeneous proto-granules, the Symprotit of the Chondritstadiums. The cell thus represents a socialization of various development stages of the same organism, which the new organizational unit "cell" has made itself useful for the construction and maintenance thereof. These elements are:

The nucleus = Thecit.

The nuclear coat = Thecithull.

The individual nuclear elements = Mych and the Symmycha (Chromidien, that are fixed neither in size nor number).

The nuclear fluid = plasma coat in the Protitstages.

The cell plasma = Chondritstage, with a sponge-like arrangement.

The cell coat = Chondrit branching.

The higher cell of the protozoans and metazoans differs primarily from the Chlamydozoit only in its fixity and the more or less rhythmic organization of the nuclear components (Chromidien and chromioles) according to size, number and positioning, although this principle is broken among the metazoans, and even more so among the protozoans, by the appearance of the polyenergiden nuclei. H. Dechow has demonstrated, on the basis of years of exemplary work in culturing the cancer pathogen (Endobiont = NR) to a likewise cell-like Kulminante, namely the Amoebit, how much nature is capable of escalating this construction principle of bacterioform phenomenological shapes. This, the cancer cell, shared with the Guarneri's corpuscles (comparative-morphologically quite similar) the fate of being considered by all researchers to be degenerated body cells of the host. Definitely a triumph of the cyclogenetic-development-history view of things! How unbelievably simple this proof is, when one knows the development processes, is shown by the confirmation of the same in the various forms of the Guarneri's corpuscles, which arrange themselves effortlessly in the recognized rhythm of creation, as is demonstrated in more detail in the following article.

In particular the characteristics of the Amoebit, the cancer cell, recognized by H. Dechow, of growth and multiplication, as well as of decay into lower units of single isolated cells, have a fundamental significance as opposed to the body cell and in agreement with all higher phenomenological forms, derived from the Thecit, out of the Chondrit-Bacteria-Aspergillus series with, in part, cell-like character such as the conidia, the Guarneri's corpuscles, the Chlamydozoit and the Morulit.

As for the differences in infectivity between vaccine and variola, the differences of Dynamogenie of the infection elements in all likelihood represent the driving force, are therefore dependent on the nuclear valency. This is in the Chondritstadium of the vaccine lymph a very low-value Dynamovalenz and thus causes a lighter infection, namely cowpox, whereas a Synthecitstadium of the Guarneri's corpuscles of a highly infectious pox scab, which incorporates a high-value nuclear valency, will cause a serious infection of genuine pustules. The large cyclodischen distance of both Cyclostadien causes the transition to founder, primarily, on the abundance of the intervening Mochlosen (impediments).

At the same time, this investigation has revealed that, among the numerous viewpoints concerning the histological valency of the bacteria, those who grasped them in their totality as nucleus (but without flagellum) came closest to the actual relationships. But in fact the relationship of Mychit (sphere) to Syndimychit (rod) is the same as that of protozoan to metazoan. The first preparatory step to the cell plasma among the bacteria are the flagella and all the appendages in the Chondritstadium, even when they haven't yet secondarily differentiated into flagella.

The proto-granule (Protit and Symprotit) might well be more widespread in nature than one could even imagine. I even found it in exobasidium. Szathmary

demonstrated its presence in the higher fungi. It also appears in aspergillus and cyanophycus.

Similar structures in the higher algae, as for example the sterile whorls of the Acetabularia mediterranea, which lives in the Adriatic Sea near Trieste, would need to be tested in this context. But it might play a pre-eminent role even in the blood of higher animals, where applicable morphological elements are to be found in huge quantities and in great diversity. But the higher Cyclostadien also can be found everywhere in their higher organisms, especially in the processes of chromosomes, which repeat the processes of the bacterial rod down to the smallest detail. Even the Thecit seems to be mirrored in the thrombocyte (Cf. Bakteria Cyclogeny [now available in english - $69.00 US] 1925, p. 310 and figs. 329 & 330).

Boundless work awaits here. All pre-cellular stages of the higher organisms will be involved in the build-up, and thus the purely theoretical views of Nägeli, Altmann, etc. concerning the valency of the mitochondria and similar structures as life elements are scientifically vindicated by culturing. Perhaps many of the Buchner symbioses of bacteria with insects in a similar sense as a pre-cellular stage which is useful to the total organism, will even be able to be verified.

The sheer boundless polymorphism of the phenomenological forms of the cyclogenetischen constructive series of Protit, Chondrit, Mychit, bacterial rod, Cystite, Thecit, composite Thecit (Synthecit) with Guarneri's corpuscles and mold spores (conidia) up to the cell-like forms Chlamydozoit, Morulit and Amoebit, can only be understood through the constant boundlessly potentiated (by means of concentration and conjugation) valency of the nuclear elements (Mych, Symmycha) of the ascending Dynamogenie. One should keep in mind that the haploid and diploid phase of plant and animal, a form - here initially fixed as to number, size and arrangement - of the final nuclear elements, is only a meager remnant of the boundless primordial bounty of the Dynamogenie of the proto-organisms, which is represented by the series Chondrit, bacterium, mold. C. Börner, in his fundamental tocontology (whose design significance for all these organisms is quite well known to all biologists) has described (Die natürliche Schöpfungsgeschichte als Tokontologie [The natural history of creation as tocontology] Leipzig, Th. Weicher, 1913, 159 pgs., 10 tables & 11 illus.) what gigantic dimensions of differentiation within this simple alternation alone, between merely two nuclear valencies - namely from haploid to diploid phase - still remain for plants and animals.

The reason why the homogeneous proto-granule (Protit and Symprotit) has not yet been taken seriously, and why the necessary genetic evaluation has not been made, is that people have not been able to tear themselves away from the centuries-old, firmly rooted idea that the cell is the lowest fundamental unit of life.