

## Élément documentaire - La théorie cellulaire

### ÉTUDE DE TEXTES HISTORIQUES EN ANGLAIS

#### Description

L'objectif est ici de comprendre comment la théorie cellulaire a été établie, à partir des textes originaux du XIX<sup>e</sup> siècle.

#### Mots-clés

Théorie cellulaire, cellule, noyau, épistémologie, anglais.

#### Références au programme

1.3 – Une structure complexe : la cellule vivante.

#### Catégorie de ressource

Documents historiques : textes historiques du XIX<sup>e</sup> siècle.

## Documents

### Document 1 : texte de Schleiden amenant la notion de cellule, 1842, Principle of scientific botany ; or the botany as an inductive science, 2nd ed, transl. E Lankaster 1849 (London)

Every plant developed in any higher degree, is an aggregate of fully individualized, independent, separate beings, even the cells themselves.

Each cell leads<sup>1</sup> a double life: an independent one, pertaining<sup>2</sup> to its own development alone; and another incidental<sup>3</sup>, in so far as it has become an integral part of a plant. It is, however, easy to perceive that the vital process of the individual cells must form the very first, absolutely indispensable fundamental basis, both as regards vegetable physiology<sup>4</sup> and comparative physiology in general; and, therefore, in the very first instance, this question especially presents itself: how does this peculiar<sup>5</sup> little organism, the cell, originate?

### Document 2 : texte de Schwann traduisant ses observations, 1839, Microscopical researches into the accordance in the structure and growth of animals and plants, traduit de l'allemand à l'anglais par H. Smith en 1847 (London, Sydenham Society).

Although plants present so great a variety of external form, yet they are no less remarkable for the simplicity of their internal structure. This extraordinary diversity in figure<sup>6</sup> is produced solely<sup>7</sup> by different modes of junction of simple elementary structures, which, though they present various modifications, are yet throughout essentially the same, namely, *cells*.

[...] When, however, we turn to the history of the development of these animal tissues, it appears, that all their manifold<sup>8</sup> forms originate likewise<sup>9</sup> only from cells, indeed from cells which are entirely analogous to those of vegetables, and which exhibit the most remarkable accordance with them in some of the vital phenomena which they manifest. *The design of the present treatise<sup>10</sup> is to prove this by a series of observations.*

1. : to lead = mener (here)
2. pertaining to = concerning
3. incidental = secondary (here)
4. physiology = study of the functions of a living organism
5. peculiar = particular, specific (here)
6. figure = shape (here)
7. solely = only
8. manifold = various
9. likewise = similarly
10. treatise = traité

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### Document 3 : texte de Schwann formulant la théorie cellulaire, 1839, *Microscopical researches into the accordance in the structure and growth of animals and plants*, traduit de l'allemand à l'anglais par H. Smith en 1847 (London, Sydenham Society).

The development of the proposition, that there exists a general principle for the formation of all organic productions, and that this principle is the formation of cells [...] may be comprised<sup>11</sup> under the term *cell-theory*.

- All parts of plants and animals are cellular either in organization or in derivation
- Cells are autonomous living units, and although each cell is influenced by its neighbours, the life of the whole organism is the product, not the cause, of the life of its cellular elements
- Cells arise<sup>12</sup> inside or near other cells by differentiation of a homogeneous primary substance called the *cytoblastema* in a process analogous to crystallization.

[...] In a more limited sense, by *cell-theory* we understand whatever may be inferred<sup>13</sup> from this proposition with respect to the powers from which these phenomena results.

#### *Pistes d'exploitation pédagogique*

Ces documents sont des textes originaux traduits de l'allemand en anglais en 1847.

Ils mettent bien en évidence la démarche scientifique partant de l'observation et cherchant l'interprétation et la généralisation. On remarque aussi les questionnements scientifiques (document 1). La conclusion du document 2 montre que Schwann présentait la portée de la théorie cellulaire en biologie.

Le niveau d'anglais requis étant assez élevé, les documents s'adressent plus particulièrement à un enseignement en section européenne ou internationale, dans le cadre de la DNL.

#### *Commentaires et points d'attention*

##### Sources des documents originaux

- *Matthias Schleiden*, 1842, *Principle of scientific botany; or the botany as an inductive science*, 2<sup>nd</sup> ed, transl. E Lankaster 1849 (London).
- Theodore Schwann, 1839, *Microscopical researches into the accordance in the structure and growth of animals and plants*, traduit de l'allemand à l'anglais par H. Smith en 1847 (London, Sydenham Society).

##### Modifications apportées et justifications

Certaines phrases trop longues et complexes ont été raccourcies (auquel cas le symbole [...] a été inséré). Les mots de vocabulaire les plus difficiles sont donnés en note de bas de page (synonyme en anglais de préférence, sinon traduction en italique), d'autres se comprennent naturellement dans le contexte des documents.