Scholar Publishing Group
Academic Journal of Environmental Biology
https://doi.org/10.38007/AJEB.2021.020103
ISSN 2789-8407 Vol. 2, Issue 1: 21-29

Status and Improvement Trend of Molecular Biology Technology in Environmental Biology

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Keywords: Molecular Biology Technology, Environmental Biology, New Coronary Pneumonia, Research and Improvement

Abstract: The sudden outbreak of novel coronavirus pneumonia in 2020 is a major test for all mankind. This major public health emergency is threatening, and social governance and medical systems in various countries are facing enormous challenges. At present, the epidemic situation is still not optimistic. Solving the new crown pneumonia epidemic and restoring normal life has become the top priority of all countries. Therefore, this paper uses analytical biotechnology to study the symptoms of CPA patients in the new coronavirus, and the symptoms of virus transmission in environmental biology. The purpose of this paper is the research status and improvement trend of molecular biology technology in environmental biology. In the experiment, the CPA patients of M hospital were taken as the research objects, and the purpose was to study the role of molecular biology technology in the rapid detection of the pathogens of new coronary pneumonia, as well as the etiological composition and clinical characteristics.

1. Introduction

The new crown pneumonia epidemic that broke out at the end of 2019 is a global pandemic with the greatest damage to human beings in the past century. A group of scientists working in different fields of molecular biology provides their views on the latest important technological advances in the field, where it is lacking, and their wish list for future technological improvements. The molecular biology technology in environmental biology research is relatively less. The outbreak of the epidemic has provided a huge challenge to the whole world, and molecular biology technology has provided great help for the research of new coronary pneumonia [1].

Biology heralds a new beginning in professional improvement, becoming a leader in many disciplines. Berlot E, based on lesions and imaging studies, argues that "motor stepping" is a proxy for cognitive behavior that becomes more localized with learning. A critical review of the evidence

supporting this view points to several caveats in the interpretation, most of which are presented in Karl Lashley's classic essay. We hypothesized that motor skills may not be stored in a single region, but rather encoded in multiple representations involving cortical and subcortical regions. To better understand the change and learning of distributed objects, a more detailed description of the experimental process models of intellectual activity and intellectual acquisition is required [2]. Capecchi, Evans and Smithies won the Nobel Prize in Medicine for creating the first gene knockout mouse. These mice were engineered to lack the gene and thus enable MHC class 1 function, heralding the beginning of a new era of scientific method that has undoubtedly accelerated research in many fields of biology, especially vaccines. Recent advances have allowed the generation of tissue-specific and even inducible molecular deletions, allowing the exploration of highly complex spatial and temporal immunological questions. They report the first toxoplasmosis study using genetically deficient mice. Since these early studies, several original reports have been published in which genetically deficient mice were used to explore the role of specific genes during Toxoplasma infection. This allowed the construction of a set of tables detailing the comparative characteristics of infected mice compared to appropriate wild-type control mice. For ease of reference, these are organized into groups including: interleukins or interleukin receptors; TLRs and other innate sensory receptors; cell signaling and transcription factors and their induced effects; CDs, receptors, antigen processing components, autologous Chemokine defects in phagocytosis, inflammasome, and other genes. Currently, the International Knockout Mice Consortium aims to facilitate the production of knockout mice for each gene by providing a collection of embryonic stem cells that contain every gene in the genome. With this achievement, the understanding of the host response to Toxoplasma infection can be greatly increased [3].Biology continues to improve and is beginning to expand into fields such as modern molecular biology and artificial life.

This paper studies the overview of COVID-19 prevention and control, the theory of environmental biology, and molecular biology techniques. Taking CPA patients in M hospital as the research object, the purpose is to study the role of molecular biology technology in the rapid detection of new coronary pneumonia pathogens, as well as the etiological composition and clinical characteristics. In the experiment, the basic research information and clinical data collection and specimens were collected, and the general conditions of CAP patients, the clinical symptoms of CAP patients, and the laboratory test results of CAP patients were analyzed.

2. Research Status and Improvement Trend of Molecular Biology Technology in Environmental Biology

2.1. Overview of COVID-19 Prevention and Control

Novel coronavirus pneumonia, scientific name COVID-19, referred to as new coronary pneumonia, is characterized by fast transmission, wide transmission channels, difficult prevention and control, and simple transmission methods [4-5]. Since the outbreak of the epidemic, it has brought huge disasters and impacts to the world, and even changed people's living patterns to a certain extent. In order to prevent and control the novel coronavirus epidemic, governments around the world have adopted different epidemic prevention policies. According to the effectiveness of epidemic prevention and control at this stage, the great advantages of China's plan can be clearly seen. This fully reflects the new national system of science and technology, which can play the greatest role and advantages in the field of scientific research and technology research and in response to public health emergencies in the digital age [6-7].

2.2. Environmental Biology Theory

Biology is divided into evolutionary biology, which studies ultimate causes, and functional biology, which studies recent causes. Higher-order factors are those that explain the evolution (selection) of a particular genetic system, while more recent factors are responsible for releasing stored genetic information in response to current environmental stimuli; more recent factors are related to the function and improvement of an organism [8]. Psychology to biochemistry; evolutionary, historical or higher order reasons to try to explain why the physical world is the way it is. Living things are genetically programmed for two different reasons than non-living things. Recent causes have to do with changes in the genetic makeup of individuals, while evolutionary (ultimate) causes have to do with changes in genetic makeup over time and the reasons for those changes. The biological question cannot be fully resolved until its immediate and ultimate cause is explained. Genetics is the theoretical basis of biology, and genetics has laid an important cornerstone for biology [9]. With the improvement of genetics, human understanding has also been enhanced by the relationship between sex and heredity, and the general association of genes. The theory of genetics poses a great challenge to the moral code of human beings, and genetics has the ability to be transformed into action through technology. The cloning technology researched by genetics is affecting and changing the life of human beings. They influence people's opinions [10].

2.3. Molecular Biology Techniques

Molecular biology and molecular biotechnology have a wide range of uses. The success of the research also depends on whether the probe can accurately and accurately select the corresponding nucleotide sequence to be detected [10-11]. Enzyme-linked immunosorbent assays, DNA binding assays and quantitative fluorescence assays that extend this technology are gradually playing a very important role in detection [12-13]. ELISA is to label specific biotin starting materials, label the products one by one during the process, and then add the products to streptavidin-coated ELISA plates. Then use the corresponding substrate to improve color, and finally determine the concentration of cells in the sample to be tested according to the intensity of the color. Since the copy number of ribosomal genes on each cell's chromosome is very stable, this approach overcomes environmental factors and inefficiencies in cell growth stages [14-15].

Nucleic acid hybridization methods use two probes, one labeled with biotin and the other labeled with fluorescein. During detection, firstly use streptavidin to neutralize the biotin-labeled probe on the ELISA plate, that is, the capture probe, then add the sample extract, wash the neutralizer, and then add the fluorescein-labeled probe[16-17]. That is, the signal probe, if the method used is to connect more signal probes, the method after flushing remains the same. Through analysis, specific and non-specific enhancements can be better distinguished, thereby improving the accuracy of quantitative results. The operation is accurate and fast, and it shows great potential in rapid force and large detection [18-19].

3. Investigation and Research of Molecular Biology Technology in Environmental Biology

3.1. Information Collection

(1) Specimen source

Oropharyngeal swabs or sputum specimens from inpatients with community-acquired pneumonia who were treated in M Hospital were stored in a -80 ℃ refrigerator for future use.

(2) Research objects

The subjects of this study were CPA patients diagnosed with hospital-acquired pneumonia in M.

(3) Purpose

To study the role of molecular biology techniques in the rapid detection of community-acquired pneumonia pathogens, as well as the etiological composition and clinical characteristics, to better provide a reliable etiological basis for clinical diagnosis and treatment.

3.2. Collection of Clinical Data and Collection of Specimens

(1) Collection of clinical data

The collected names, gender, age, clinical symptoms and other results of the enrolled cases were summarized and sorted.

(2) Collection of oropharyngeal swabs

1. Rinse mouth with water before collecting specimens;

2. Instruct the patient to open his mouth wide, make an "ah" sound, use a tongue depressor to help fully expose the posterior pharyngeal wall, and use a sterile throat swab to repeatedly wipe the posterior pharyngeal wall, tonsillar recess, and lateral wall for 3- 5 times, avoid touching the tongue, oral mucosa and saliva.

3. Insert the swab head into the transfer tube, the specimen can be placed at 2-8 ℃ for 72 hours, or in a -80 ℃ ultra-low temperature refrigerator if it is stored for a long time.

(2) Collection of sputum specimens

1. Rinse mouth with water before collecting specimens;

2. Forcefully cough out the deep sputum into a sterile sputum cup and store at -80 ℃;

Determination of qualified sputum: low-power field of view, select 3 low-power field of view, count the average number of leukocytes and squamous epithelial cells, when the number of squamous epithelial cells is less than 10/low-power field, and the number of leukocytes is more than 25/low-power field, or sputum specimens with a ratio of 1:2 are qualified specimens. Sputum specimens that do not meet the above eligibility criteria should be re-collected.

4. Analysis and Research of Molecular Biology Technology in Environmental Biology

4.1. General Situation of Patients with CAP

A total of 200 patients with community-acquired pneumonia admitted to hospital were enrolled, including 25 patients with severe pneumonia. All patients with CAP had abnormal infiltration shadows and clinical symptoms on chest X-ray or chest CT examination. Among them, the ratio of male to female is 0.98:1, the age is 18-98 years old, the average age is 63.2 years old, the hospitalization days are 1-36 days, and the average hospitalization days are 8.2 days, as shown in Table 1:

Table 1. Clinical attractions of community-acquired pneumonia recipients

Clinical characteristics		Tote
Sex	Men	101
	Women	99
Age (year)	18-60	167
	>60	33
Symptom	Give out heat	195
	Mean body temperature	38.5
	Cough	164
	Expectoration	170
	Sense of suppression in the chest	193
	Pectoralgia	120
	Give out heat	10
Average length of stay (days)		8.2

4.2. Clinical Symptoms of CAP Patients

The clinical manifestations of most patients are cough, expectoration of single pathogen bacteria, atypical pathogens, and virus test positive for CAP patients. Except for the difference in wet rales, there is no significant difference in other main clinical manifestations, as shown in Table 2. and as shown in Figure 1:

Table 2. Clinical findings of (%) of patients with a single pathogen-positive CAP

Symptoms	Total number	Germ	Atypical pathogens	Virus	P price
Pharyngalgia	132	58	3	11	0.784
Cough	196	14	8	15	0.699
Headache	185	23	4	34	0.405
Expectoration	156	36	5	25	0.602
Snot nasal congestion	175	24	7	28	0.802
Sense of suppression in the chest	164	28	9	19	0.3
Feeble	136	17	10	16	0.05
Muscular soreness	147	19	2	27	0.165
Abnormal breathing sound	159	18	4	16	0.314
Pectoralgia	16	8	3	23	0.415
Give out heat	58	14	2	9	0.540

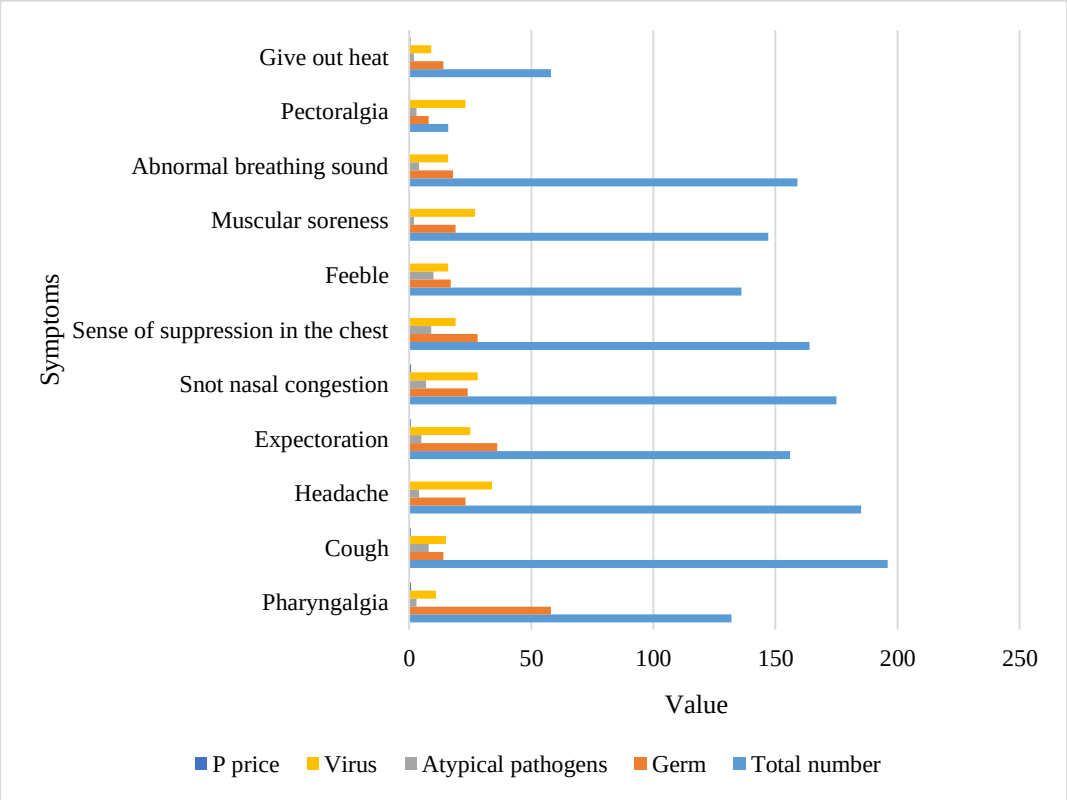

Figure 1. Data plot of patients positive for a single pathogen

The results showed that the incidence of various clinical symptoms: fever 37.5%, sore throat 36.2%, cough 90.8%, expectoration 86.2%, headache 10.5%, nasal congestion and runny nose 15.3%, chest tightness 6.3%, fatigue 30.5%, muscle aches 10.6% %, chest pain was 15.3%, and more than half of the patients had moist rales on auscultation of the lungs, 72.33%.

4.3. Laboratory Test Results of CAP Patients

There was no significant difference in the absolute value of white blood cell count, the percentage of neutrophils, the percentage of lymphocytes and C-reactive protein among the three groups of patients who were positive for different single pathogens. The specific conditions are shown in Table 3 and Figure 2:

Table 3. Single-positive laboratory examination analysis (%) in patients with community-acquired pneumonia

Experimental examination	Total number	Germ	Atypical pathogens	Virus	P price
Absolute white blood cell values	85	10	25	13	0.024
Percentage of neutrophils	25	8	11	16	0.154
The percentage of the lymphocytes in the vs	48	6	50	28	0.255
Reactive protein	25	7	23	19	0.365

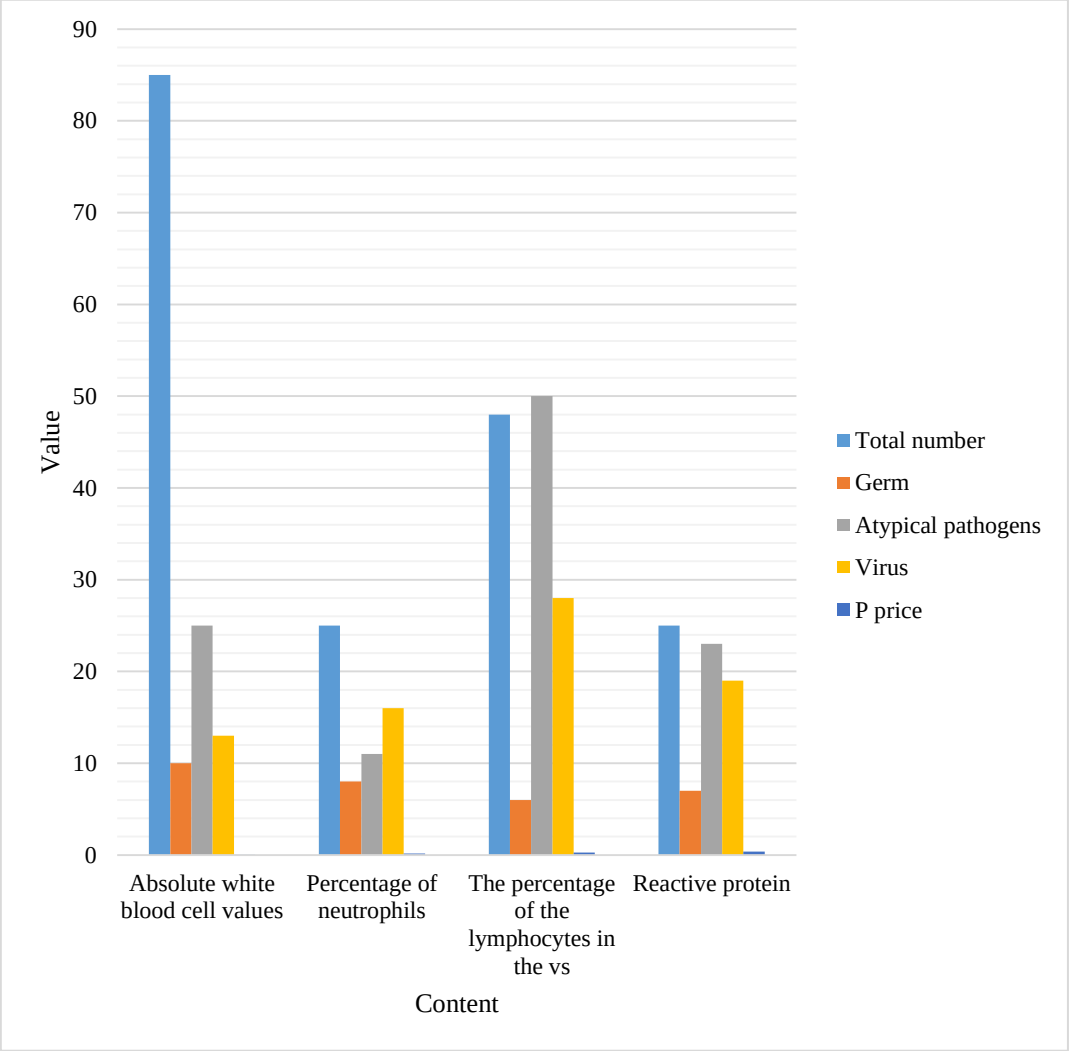

Figure 2. Comparison plot of the laboratory examination and analysis data

In terms of laboratory examination, the proportion of absolute value of white blood cell count in the blood routine of patients with positive single bacteria was 26.3%; the proportion of neutrophil percentage was 63.5%, and the proportion of elevated C-reactive protein was 85.2%. The white blood cell count, neutrophil percentage, and lymphocyte percentage of atypical pathogens were mostly within the normal range, and the number of patients with elevated C-reactive protein was 82.15%.

5. Conclusion

At the beginning of 2020, the new crown pneumonia virus bit the gears of time and pressed the pause button for everything. This sudden outbreak has spread across China and the world at an alarming rate. After three months of arduous anti-epidemic work, the new crown pneumonia epidemic has been effectively controlled, and the epidemic prevention and control work has achieved staged victory. At the same time, while remembering the deceased and remembering the history, it is also guiding the strong Chinese people to move forward with gratitude and courage.

Analytical biology techniques play a huge role in the study of viruses.

Funding

This article is not supported by any foundation.

Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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