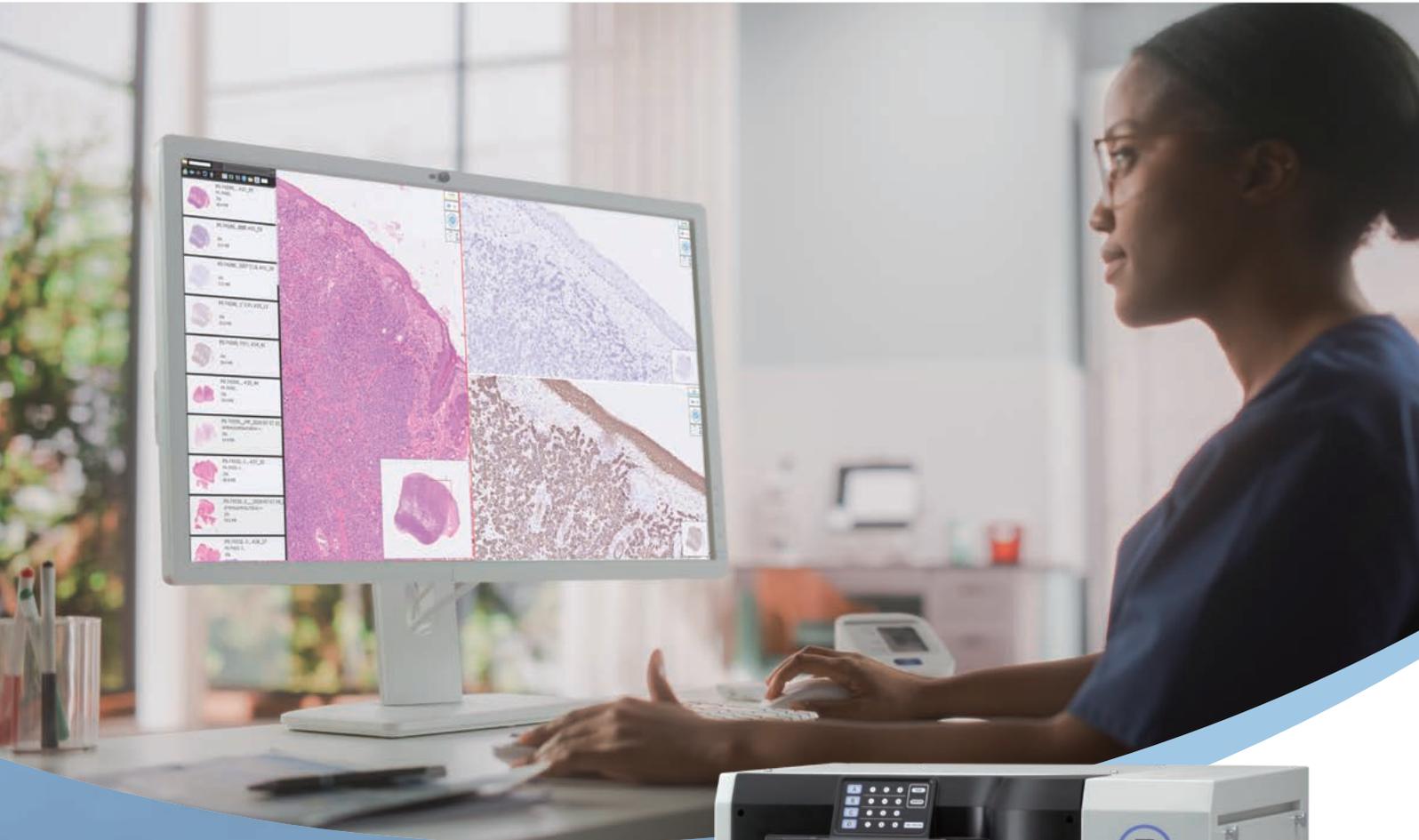


NEW

RUO model

# Digital Veterinary Pathology Workflow

NanoZoomer® application case study



**HAMAMATSU**  
PHOTON IS OUR BUSINESS

# Digital Veterinary Pathology Test

Amanecer Co., Ltd. has been digitizing veterinary samples using whole slide scanners since 2013 and adopted the NanoZoomer in 2020. Their goal is to enhance test quality and service efficiency through a digital pathology workflow.



## Amanecer Co., Ltd.

Headquartered in its own building in Sapporo, Hokkaido. Amanecer Co., Ltd. handles approximately 30 000 pathology test requests annually (as of 2024) from over 6000 contracted veterinary clinics across Japan, supported by their offices in Tokyo and Osaka.

Annually processing  
Approx. **30 000** specimens

Number of vet pathologists  
**6** vet pathologists

Number of contracted vet clinics  
Over **6000**

Please refer to page 5 for details.

## Digitalization of veterinary pathology

**Q.1** How do you use digital pathology for veterinary purposes?

Our general workflow involves preparing slides from samples sent by animal clinics nationwide, conducting tests, and submitting reports. We use whole slide scanners to digitize slides, enabling us to test and capture images for test reports. Currently, we digitize about half of our pathology tests (approximately 50 cases per day). Ideally, we would like to scan all slides digitally, but certain samples are better tested using a microscope. Therefore, we use a combination of digital and traditional methods. We believe this hybrid approach allows us to deliver more accurate tests and better services.



**Q.2** Why did you implement a digital pathology workflow?

Our primary motivation for adopting digital pathology was to enable remote tests from outside the office. Additionally, we wanted to embrace innovation as a veterinary company. We introduced whole slide scanners in 2013 and began implementing a digital pathology workflow. Although we faced initial challenges in scanning slides during the first few months, we were able to overcome them and have since been consistently delivering reliable pathology services.

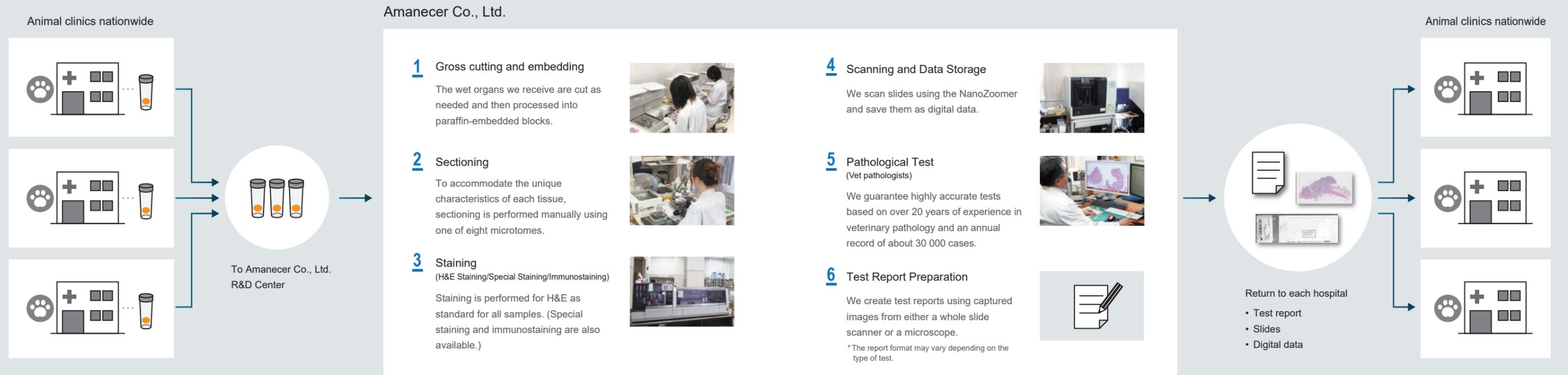
**Q.3** What are the benefits of digitalization?

Before implementing digital pathology, we stored all slides physically and had to retrieve them manually from our warehouse when needed, even for cases tested a month prior. This retrieval process was time-consuming and often added significantly to our workload.

One of the biggest advantages of digitization is the ability to quickly review slides on a monitor, allowing us to analyze both broad overviews and detailed disease markers more efficiently. Digital pathology also facilitates genetic testing, which is often required to predict the effectiveness of molecular-targeted drug treatments for malignant tumors.

For accurate genetic testing, it's essential that the test sample

## Digital veterinary pathology workflow of Amanecer Co., Ltd.



contains a sufficient number of tumor cells and is properly prepared. Digitized slides enable us to review and compare multiple images simultaneously, making it easier to select the most suitable samples for genetic testing.

As we outsource genetic testing, we can also share precise tumor area information with partner labs, improving both the accuracy and efficiency of genetic testing.

**Q.4** What is needed to expand digitalized operations?

We believe that reducing both the time and effort required for scanning, along with minimizing data storage requirements, is key to expanding digitized operations. One significant challenge is the cost associated with maintaining large-capacity storage servers.

If scanners could further reduce image file sizes without compromising quality, these improvements would facilitate broader adoption of whole slide scanning technology across veterinary medicine.



**Q.5** What are the benefits of NanoZoomer for your workflow?

When we used other vendors' whole slide scanners, scanning was time-consuming, and we needed three scanners to process a large volume of samples within limited timeframes.

Since adopting the NanoZoomer in 2020, its fast scanning speed has enabled us to digitize the same number of samples with just one scanner. The scanning accuracy is also superior to previous models, significantly reducing the need for re-scanning. Currently, we only need to re-scan about 5 out of every 200 slides.

Furthermore, the NanoZoomer makes it easy to adjust focus positions during scanning, and the images produced have vivid colors that closely match actual samples. These benefits allow us to conduct tests efficiently without unnecessary delays.



**Q.6** What are your expectations for NanoZoomer in the future?

I hope AI technology will be utilized to further enhance image quality. For example, there are differences in how contrast appears between H&E staining and immunostaining, and focus can sometimes be inconsistent depending on conditions. If AI could automatically adjust contrast and optimize focus based on staining type, it would improve both the accuracy and speed of tests.

Additionally, when scanning large tissue samples that require multiple slides, significant effort is needed to stitch together the divided sections. It would be highly beneficial if AI could seamlessly process these images without manual intervention, streamlining our workflow.

Whole slide scanner  
The features of NanoZoomer



POINT  
1

Captures high definition images

Glass slides are scanned and captured as billions of pixels of high-definition image data.



Recommended Points

Images can be captured in colors close to the actual specimen, ensuring accurate and reliable observation.

POINT  
2

Intuitive image viewing software

The software for viewing the captured images (NDP®.view2) offers intuitive operation, even for those accustomed to using microscopes. It allows for zooming, panning, and rotating, similar to a map application.



Recommended Points

Smooth navigation to the desired observation area enables operation similar to using a microscope, making test easier.

POINT  
3

A batch of 360 glass slides can be scanned automatically

Scans up to 360 slides (30 slides × 12 cassettes). Simply place glass slides in cassettes, load them in S360 and start the process. Each slide will be automatically moved and scanned.



Recommended Points

By replacing with the fast-scanning NanoZoomer, we could reduce hands on time for the laboratory.

Amanecer Co., Ltd.

With the aspiration to contribute to the “dawn” (Spanish: Amanecer) of veterinary medicine through pathological tests, Amanecer Co., Ltd. was established in 1996. As a commercial lab specializing in pet animals, we handle over 30 000 pathology samples annually from animal hospitals nationwide. Recognizing our social responsibility as a company supporting veterinary medicine, we have been digitizing pathology test results and distributing the “Amanecer Annual” for over 15 years. We have also published breed-specific data collections such as “Dog Pathology Guide” and “Cat Pathology Guide.”

Since 2013, we have been using whole slide scanners to create digital slides for our test service. We also receive requests for data preparation for academic presentations and tasks for national and public research institutions. Now in our 29th year, we aim to continue sharing the awareness of “clinical pathology” with all our employees and clinical veterinarians, striving for higher standards of testing and better service provision.



President and CEO  
Dr. Hidetoshi Takahashi  
Veterinarian, Doctor of Medicine (left)

Head of Testing Operations Department  
Dr. Kiyoshi Aita  
Clinical Laboratory Technician, Doctor of Medicine

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