(D) $$\frac{\partial L}{\partial z_j^l} = \frac{\partial L}{\partial a_j^{l+1}} \cdot \frac{\partial a_j^{l+1}}{\partial z_j^l}$$

$$\Rightarrow \boxed{\frac{\partial L}{\partial z_j^l} = \frac{\partial L}{\partial a_j^{l+1}} \cdot \sigma'(z_j^l)}$$

$$\frac{\partial L}{\partial a_i^l} = \sum_{\forall j \text{ in layer } l} \frac{\partial L}{\partial z_j^l} \cdot \frac{\partial z_j^l}{\partial a_i^l}$$

Let $\frac{\partial L}{\partial a_i^l} = \Omega_i^l$ and Note $z_j = \sum_i (w_{ij}^l \cdot a_i^l) + b_j^l$

$$\Rightarrow \boxed{\frac{\partial L}{\partial a_i^l} = \sum_{j \in [d^{l+1}]} \Omega_j^{l+1} \cdot \sigma'(z_j^l) \cdot w_{ij}^l = \sum_{j \in [d^{l+1}]} \frac{\partial L}{\partial z_j^l} \cdot w_{ij}^l}$$

$$\frac{\partial L}{\partial w_{ij}^l} = \frac{\partial L}{\partial a_j^{l+1}} \cdot \frac{\partial a_j^{l+1}}{\partial z_j^l} \frac{\partial z_j^l}{\partial w_{ij}}$$

$$\Rightarrow \boxed{\frac{\partial L}{\partial w_{ij}^l} = \Omega_j^{l+1} \cdot \sigma'(z_j^l) \cdot a_i^l = \frac{\partial L}{\partial z_j^l} \cdot a_i^l}$$

$$\Rightarrow \boxed{\frac{\partial L}{\partial b_j^l} = \Omega_j^{l+1} \cdot \sigma'(z_j^l)}$$